MZ-R90/R91

SERVICE MANUAL

Ver 1.3 2000. 07
With SUPPLIMENT-1
(9-927-187-83)

US Model
Canadian Model
Australian Model
Chinese Model
MZ-R90
AEP Model
UK Model
E Model
Tourist Model
MZ-R90/R91



Photo: MZ-R91 (Blue type)

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	NEW
Mechanism Type	MT-MZR90-165
Optical Pick-up Name	LCX-2R

SPECIFICATIONS

System

Audio playing system
MiniDisc digital audio system

Laser diode properties
Material: GaAlAs
Wavelength: λ = 790 nm
Emission duration: continuous
Laser output: less than 44.6 µW
(This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block with 7 mm aperture.)

Recording and playback time
Maximum 80 minutes (MDW-80, stereo recording)
Maximum 160 minutes (MDW-80, monaural recording)
Maximum 74 minutes (MDW-74, stereo recording)
Maximum 148 minutes (MDW-74, monaural recording)

Revolutions
400 rpm to 1,800 rpm (CLV)

Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)

Sampling frequency
44.1 kHz

Sampling rate converter
Input: 32 kHz/44.1 kHz/48 kHz

Coding
Adaptive TRansform Acoustic Coding (ATRAC)

Modulation system
EFM (Eight to Fourteen Modulation)

Number of channels
2 stereo channels
1 monaural channel

Frequency response
20 to 20,000 Hz ± 3 dB

Wow and Flutter
Below measurable limit

Inputs
Microphone: stereo mini-jack, 0.35–1.38 mV
Line in: stereo mini-jack, 69–194 mV
Optical (Digital) in: optical (digital) mini-jack

Outputs
🎧/LINE OUT*: stereo mini-jack
Headphones: maximum output level 5 mV + 5 mV, load impedance 16 ohm
LINE OUT: 194 mV, load impedance 10 kilohm

* The 🎧/LINE OUT jack connects either headphones or a line cable.

General

Power requirements
Sony AC Power Adaptor (supplied) connected at the DC IN 3 V jack:
220–230 V AC, 50/60 Hz (European model)
120 V AC, 50 Hz (Canadian model)
100–240 V AC, 50/60 Hz (Other models)
Nickel metal hydride rechargeable battery NH-14WM (supplied)
LR6 (size AA) alkaline battery (not supplied)

Battery operation time

Battery life[1]

Batteries	Recording [2]	Playback
NH-14WM nickel metal hydride rechargeable battery	Approx. 6.5 hours	Approx. 12 hours
LR6 (SG) (size AA) Sony alkaline dry battery	Approx. 4 hours	Approx. 16.5 hours
NH-14WM nickel metal hydride rechargeable battery + One LR6 (SG) (size AA)	Approx. 14.5 hours	Approx. 29 hour

[1] The battery life may be shorter due to operating conditions and the temperature of the location.
[2] When you record, use a fully charged rechargeable battery.

Dimensions
MZ-R90
Approx. 78.9 × 17.3 × 72.0 mm (w/h/d)
($3^1/_8 \times {}^{11}/_{16} \times 2^7/_8$ in.)
MZ-R91
Approx. 78.9 × 18.0 × 72.0 mm (w/h/d)
($3^1/_8 \times {}^{23}/_{32} \times 2^7/_8$ in.)

Mass
MZ-R90
Approx. 105 g (3.7 oz) the recorder only
Approx. 148 g (5.2 oz) incl. a recordable MD, and NH-14WM nickel metal hydride rechargeable battery
MZ-R91
Approx. 110 g (3.8 oz) the recorder only
Approx. 153 g (5.4 oz) incl. a recordable MD, and NH-14WM nickel metal hydride rechargeable battery

Supplied accessories
AC power adaptor (1)
Headphones with a remote control (1) (RM-MZ2S)
NH-14WM nickel metal hydride rechargeable battery (1)
Dry battery case (1)
Rechargeable battery carrying case (1)
Carrying pouch (1)
AC plug adaptor (1)

Design and specifications are subject to change without notice.

PORTABLE MINIDISC RECORDER

SONY®

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Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

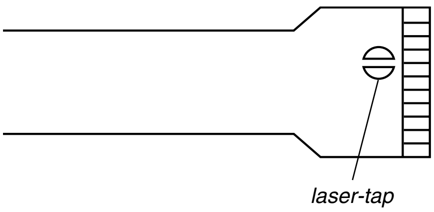
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

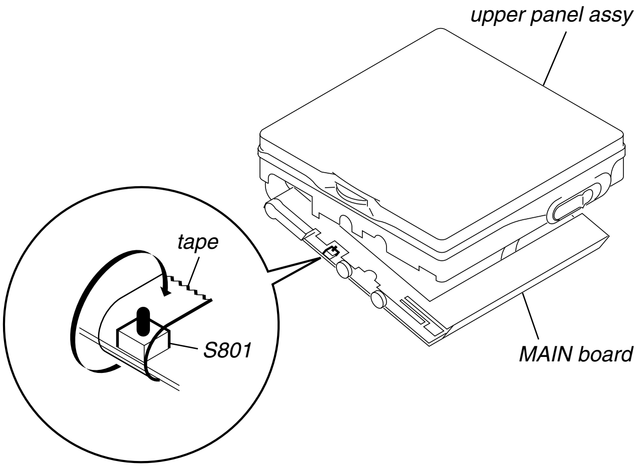
NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (LCX-2R)

The laser diode in the optical pick-up block may suffer electrostatic break-down easily. When handling it, perform soldering bridge to the laser-tap on the flexible board. Also perform measures against electrostatic break-down sufficiently before the operation. The flexible board is easily damaged and should be handled with care.



OPTICAL PICK-UP FLEXIBLE BOARD

- When repairing this device with the power on, if you remove the MAIN board or open the upper panel assy, this device stops working.
  In this case, you can work without the device stopping by fastening the hook of the open/close detect switch (S801) with tape.



- This set is designed to perform automatic adjustment for each adjustment and write its value to EEPROM. Therefore, when EEPROM (IC802) has been replaced in service, be sure to perform automatic adjustment and write resultant values to the new EEPROM.
  (Refer to Section 5 Electrical Adjustment. (page 18))

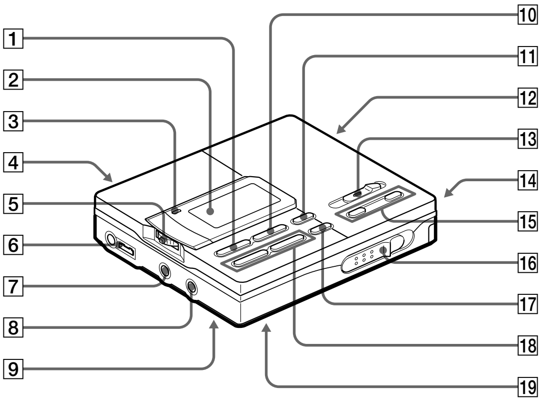
- Replacement of CXD2660GA (IC502) and CXR701080-013GA (IC801) used in this set requires a special tool. Therefore, they cannot be replaced.

SECTION 2
GENERAL

This section is extracted from instruction manual.

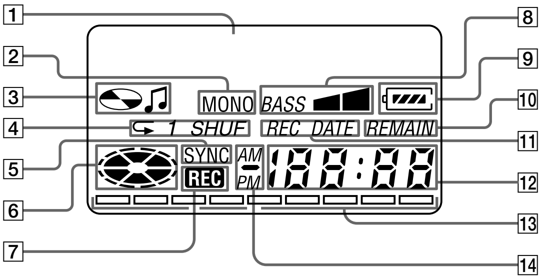
• LOCATION OF CONTROLS

– The recorder –



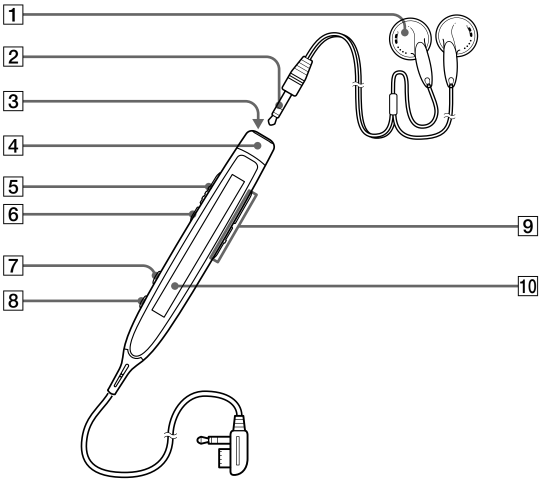
1 ■ (stop) /CHARGE button
2 Display window
3 REC indicator
4 DC IN 3V jack
5 Jog lever
6 ∩/LINE OUT (headphones/line out) jack
7 MIC (PLUG IN POWER) jack
8 LINE IN (OPTICAL) jack
9 HOLD switch
Slide to lock the controls of the recorder.
10 ► (play) button
11 ❚❚ (pause) button
12 T MARK (track mark) button
13 REC (record) switch
14 Battery compartment
15 VOL (volume) +/– buttons
16 OPEN switch
17 END SEARCH button
18 I◄◄/►►I (search/AMS) buttons
19 SYNCHRO REC (synchro-recording) ON/OFF switch

– The display window of the recorder –



1 Character information display
Displays the disc and track name*, date, error messages, track numbers, etc.
* Disc and track names appear only with MDs that have been electronically labeled.
2 MONO(monaural) indication
3 Disc name/track name indications
Appears when labeling disc or track respectively.
4 Play mode indication
Shows the play mode of the MD.
(all repeat): All tracks play repeatedly.
1(single repeat): One track plays repeatedly.
SHUF(shuffle repeat): Tracks will be repeated in random order.
5 SYNC (synchro-recording) indication
Lights up while synchro-recording.
6 Disc indication
Shows that the disc is rotating for recording, playing or editing an MD.
7 REC indication
Lights up while recording. Flashes when standing by for recording.
8 Mega bass indication
9 Battery indication
Shows approximate battery condition. While charging the rechargeable battery, this indication shows the charging condition.
10 REMAIN (remaining time/tracks) indication
Lights up along with the remaining time of the track, remaining time of the MD, or remaining number of tracks.
11 REC DATE (recorded/current date) indication
Lights up along with the date and time the MD was recorded. When only "DATE" lights up, the current date and time are displayed.
12 Time display
Shows the elapsed time of the track being recorded or played.
13 Level meter
Shows the level of the MD being played or recorded.
14 AM/PM indication
Lights up along with the time indication in the 12-hour system.

– The headphones with a remote control (RM-MZ2S) –



1 Headphones
Can be replaced with optional headphones.
2 Stereo mini plug
3 ■ (stop) button
4 Control
To play, press the control towards ►•►►I during stop. Press the control towards ►•►►I during play to search the beginning of the succeeding track; hold in this position to fast-forward. Press towards I◄◄ during play to search the beginning of the preceeding track; hold in this position to rewind.
5 HOLD switch
Slide to lock the controls of the remote control.
6 ❚❚ (pause) button
7 PLAY MODE button
8 DISPLAY button
9 VOL (volume) +/– buttons
When the AVLS is set to on, you cannot increase the volume to the maximum. To increase the volume above the limited level, set the AVLS to off using the jog lever.
10 Display window

SECTION 3
DISASSEMBLY

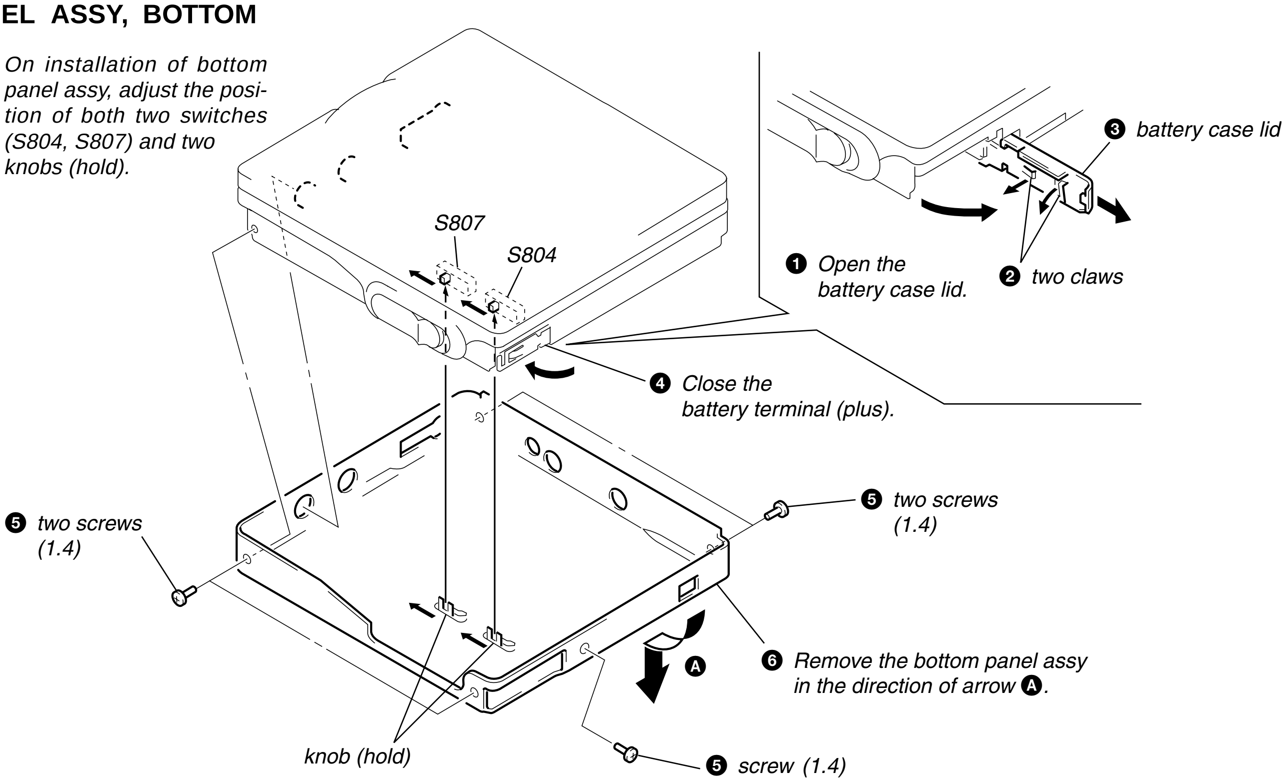
- This set can be disassembled in the order shown below.

Set → Panel Assy, Bottom → Main Board, "Case Assy, Battery"
Set → Panel Assy, Bottom → Upper Panel Section → LCD Module, "Button, Control", "Service Assy, Upper Panel" (R90/R91)
→ Belt Assy, Ornamental → Main Board, "Case Assy, Battery" → "Chassis Assy, Set", MD Mechanism Deck (MT-MZR90-165)
→ Service Assy, OP → Holder Assy
→ Motor Flexible Board
→ Motor, DC (Sled) (M602)
→ "Motor, DC SSM-01C14A (Spindle) (M601)", "Motor, DC (Over Write Head Up/Down) (M603)"

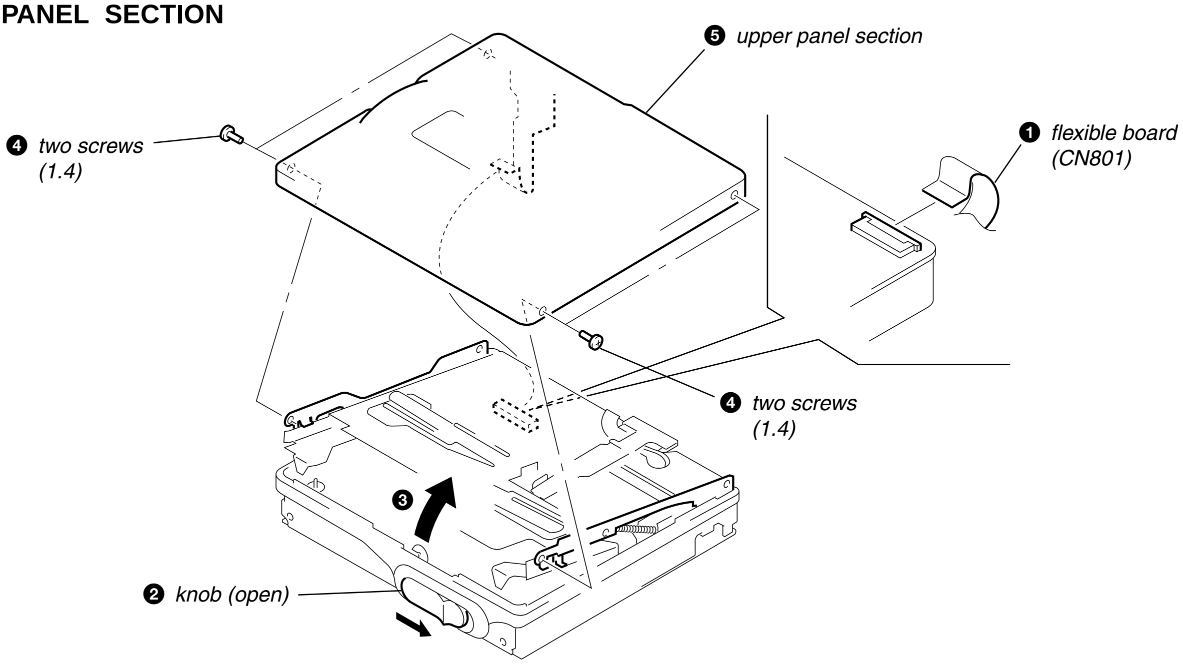
Note: Follow the disassembly procedure in the numerical order given.

PANEL ASSY, BOTTOM

Note: On installation of bottom panel assy, adjust the position of both two switches (S804, S807) and two knobs (hold).

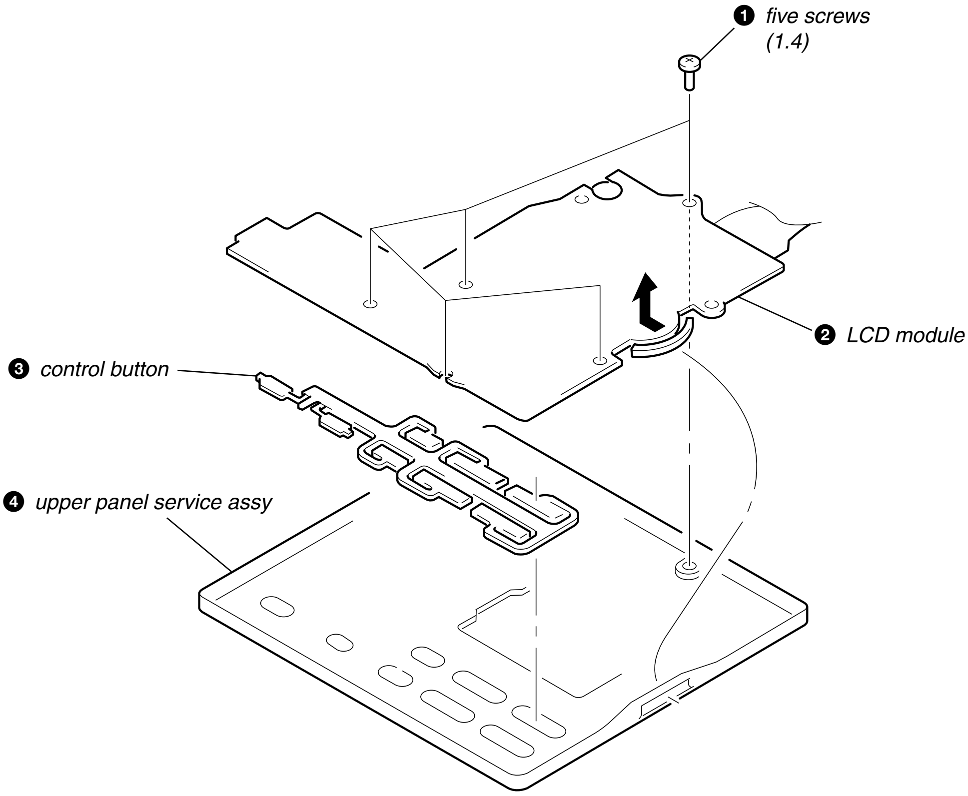


UPPER PANEL SECTION

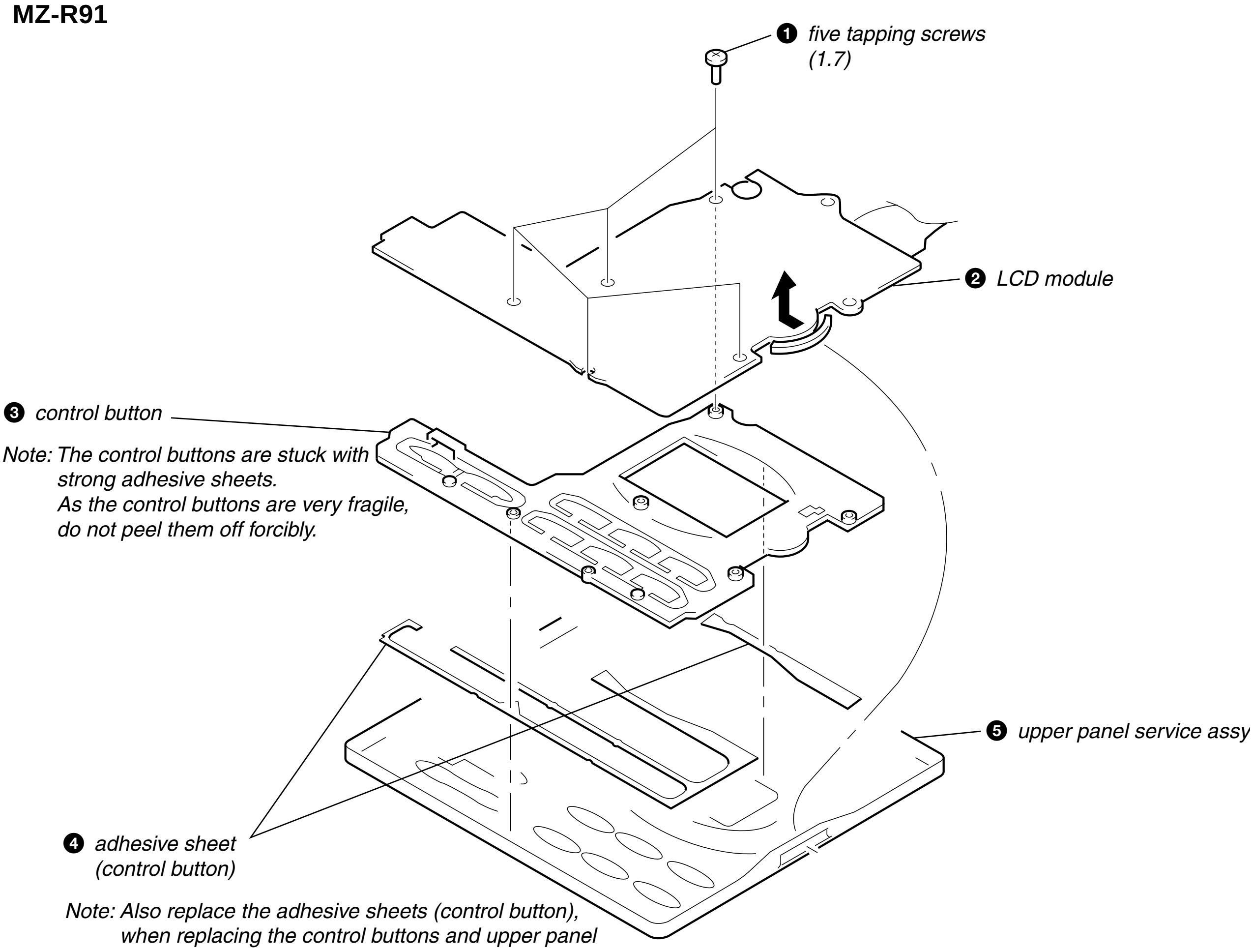


LCD MODULE, “BUTTON, CONTROL”, “SERVICE ASSY, UPPER PANEL”

- **MZ-R90**

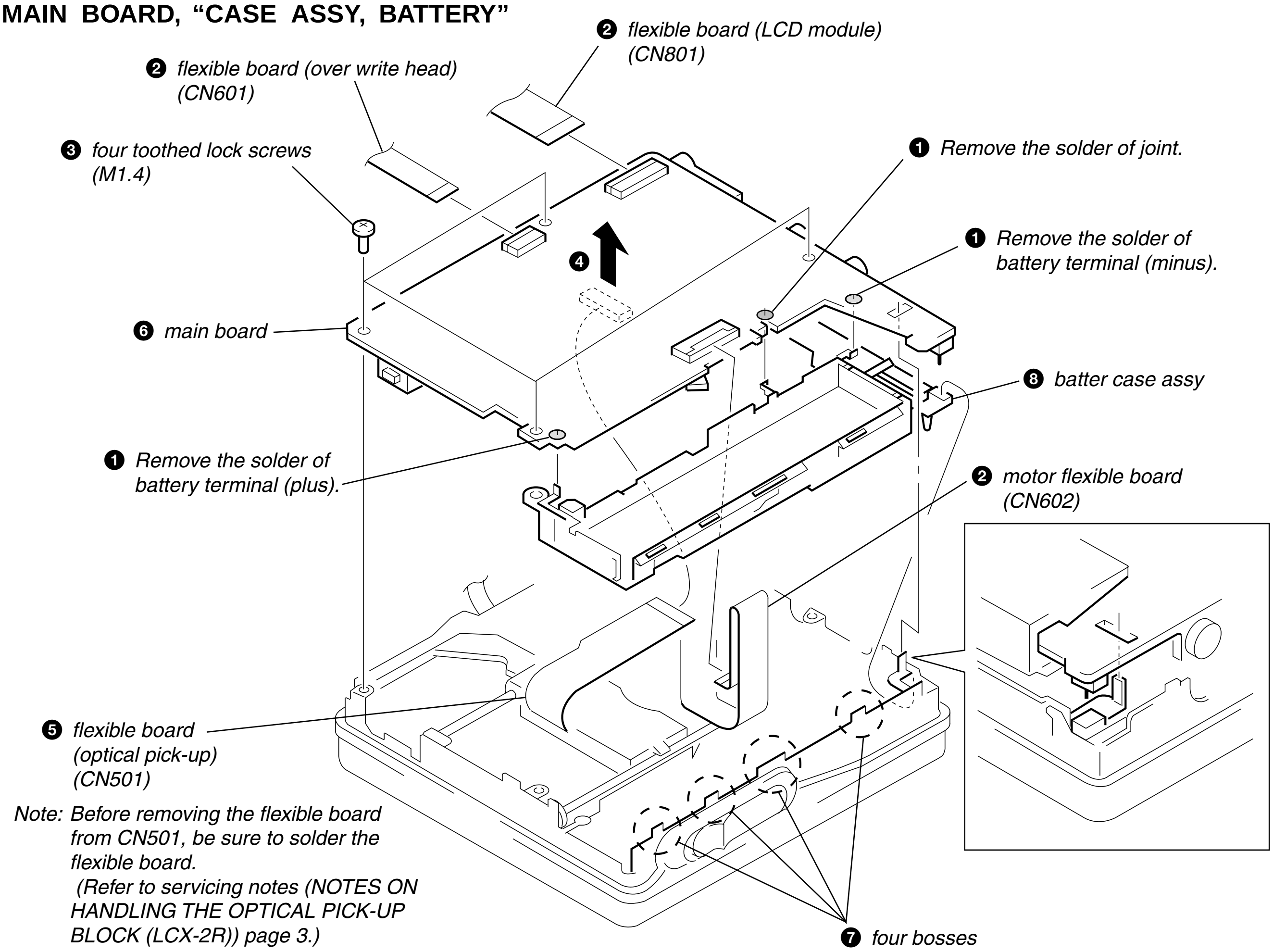


- **MZ-R91**

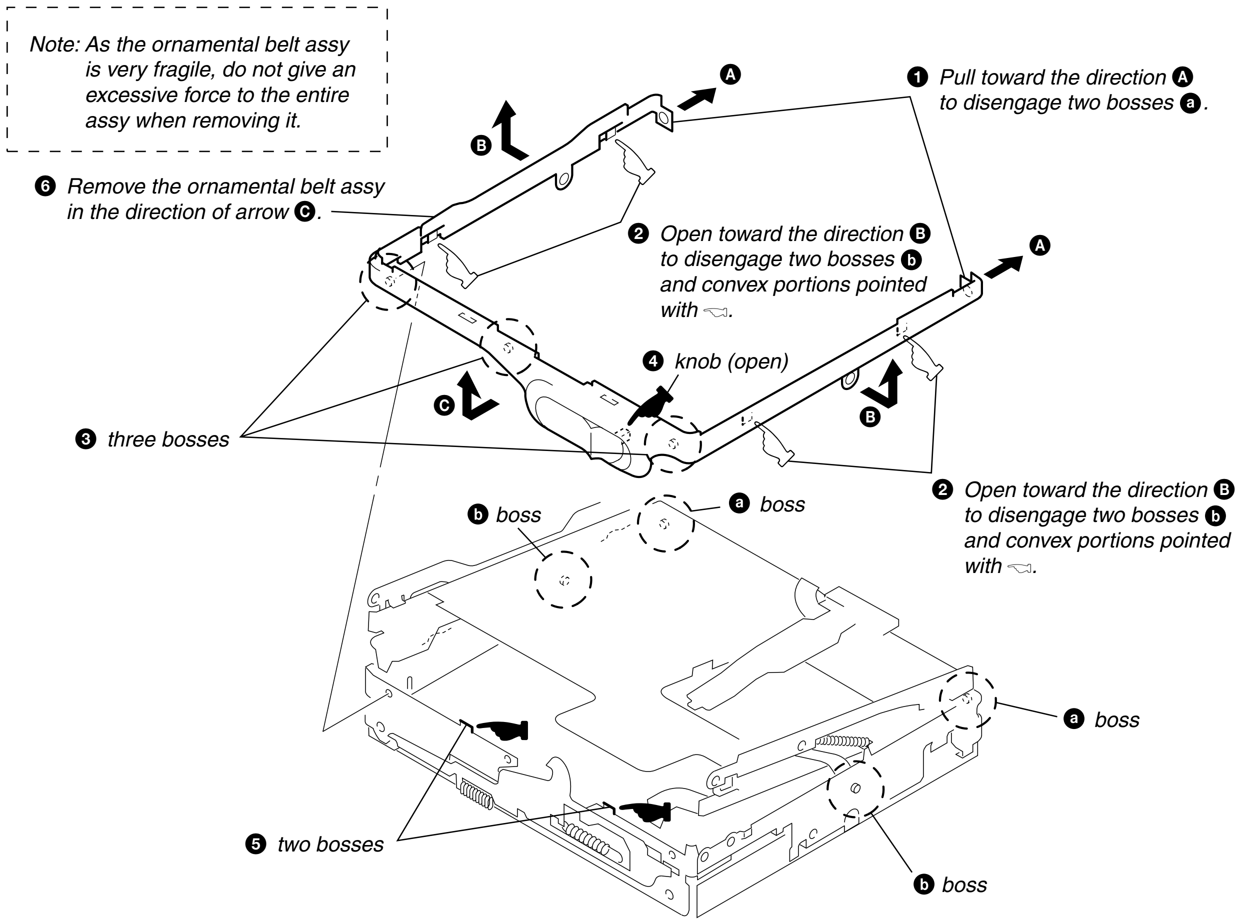


Note: Also replace the adhesive sheets (control button), when replacing the control buttons and upper panel service assy.

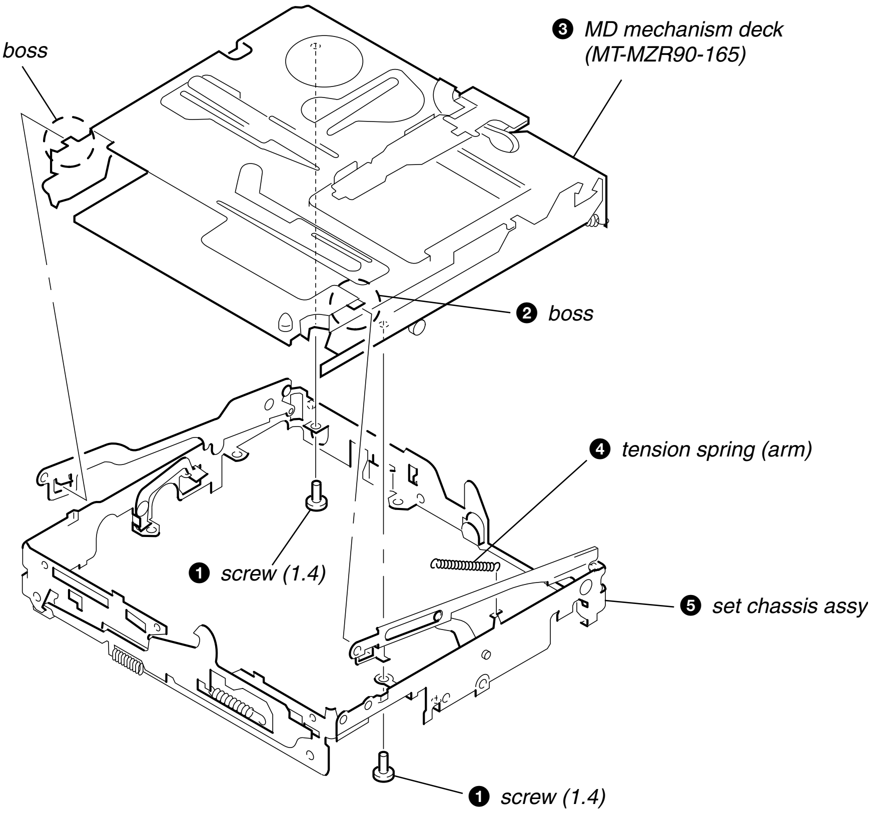
MAIN BOARD, "CASE ASSY, BATTERY"



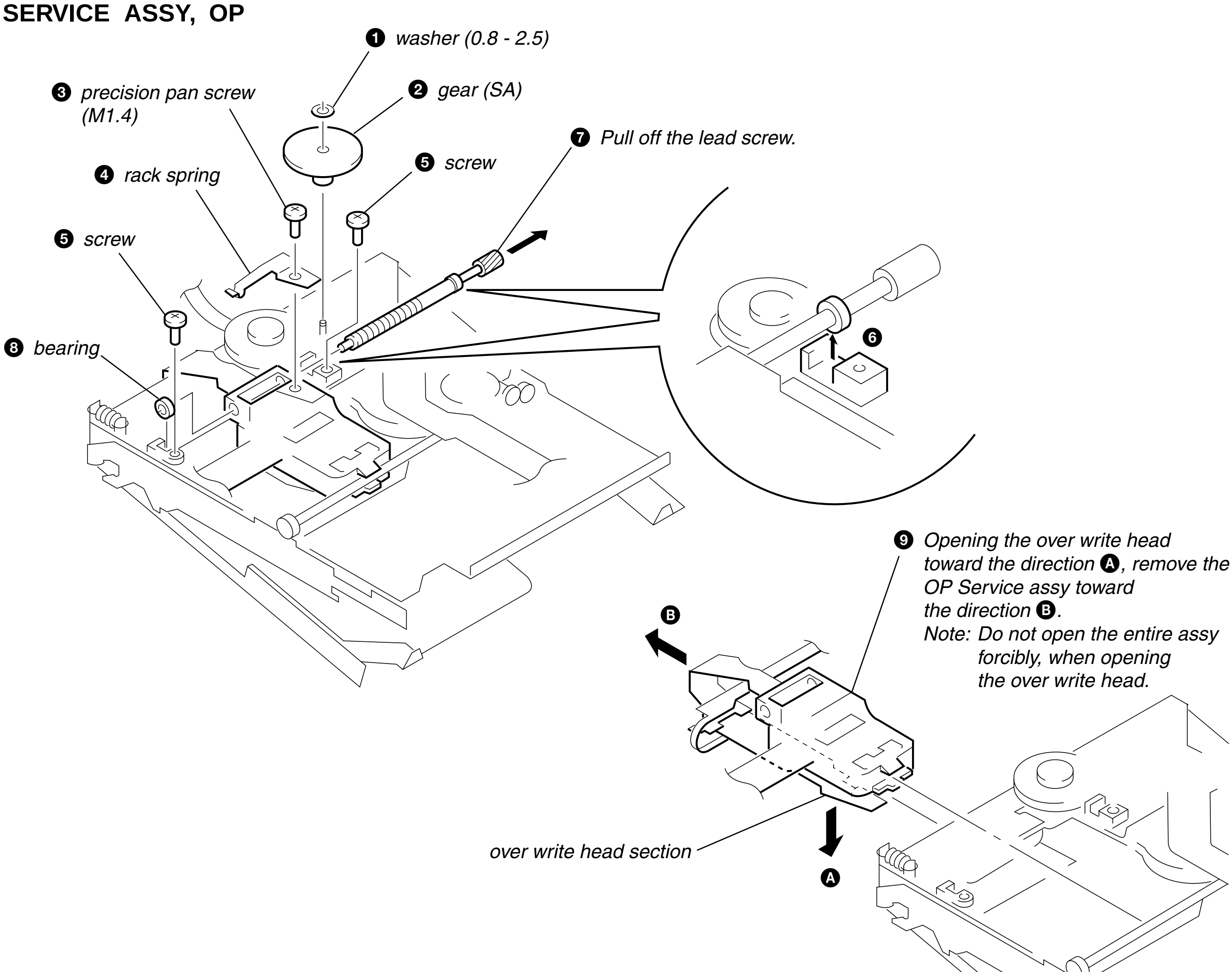
BELT ASSY, ORNAMENTAL



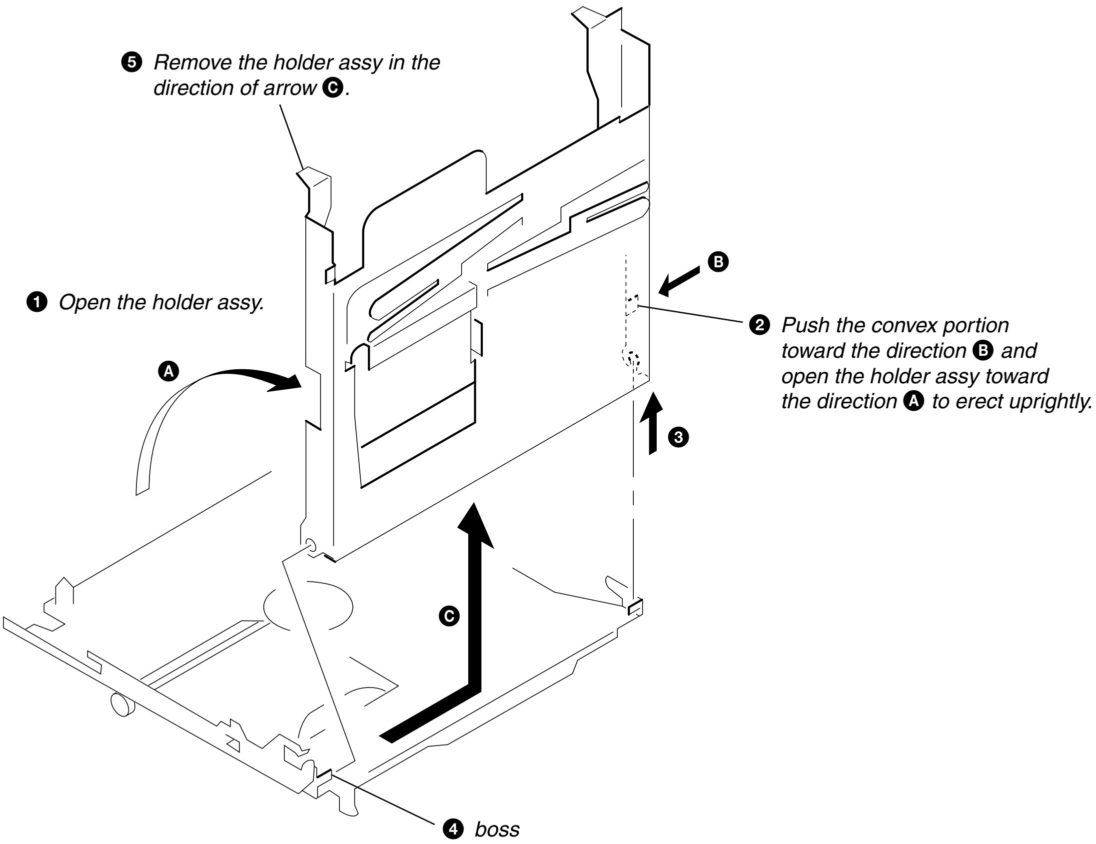
“CHASSIS ASSY, SET”, MD MECHANISM DECK (MT-MZR90-165)



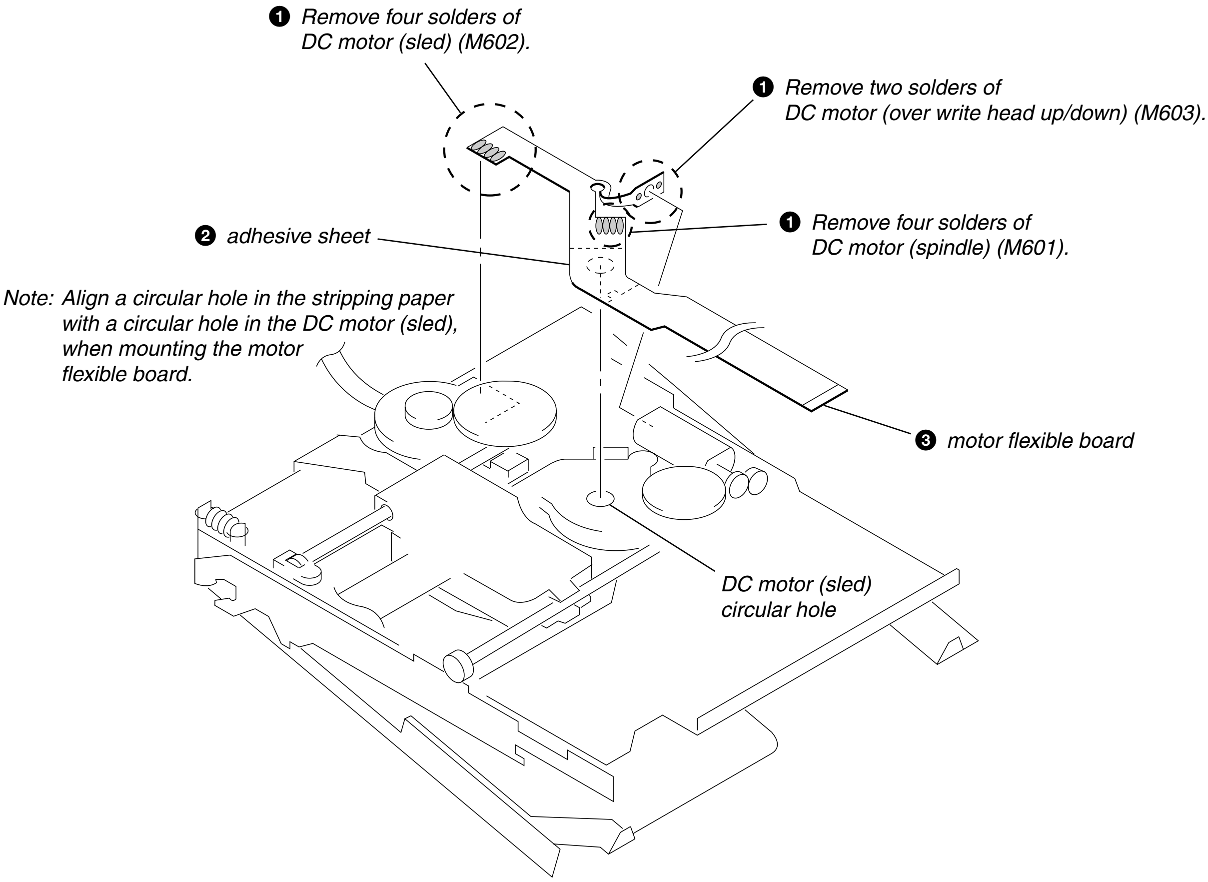
SERVICE ASSY, OP



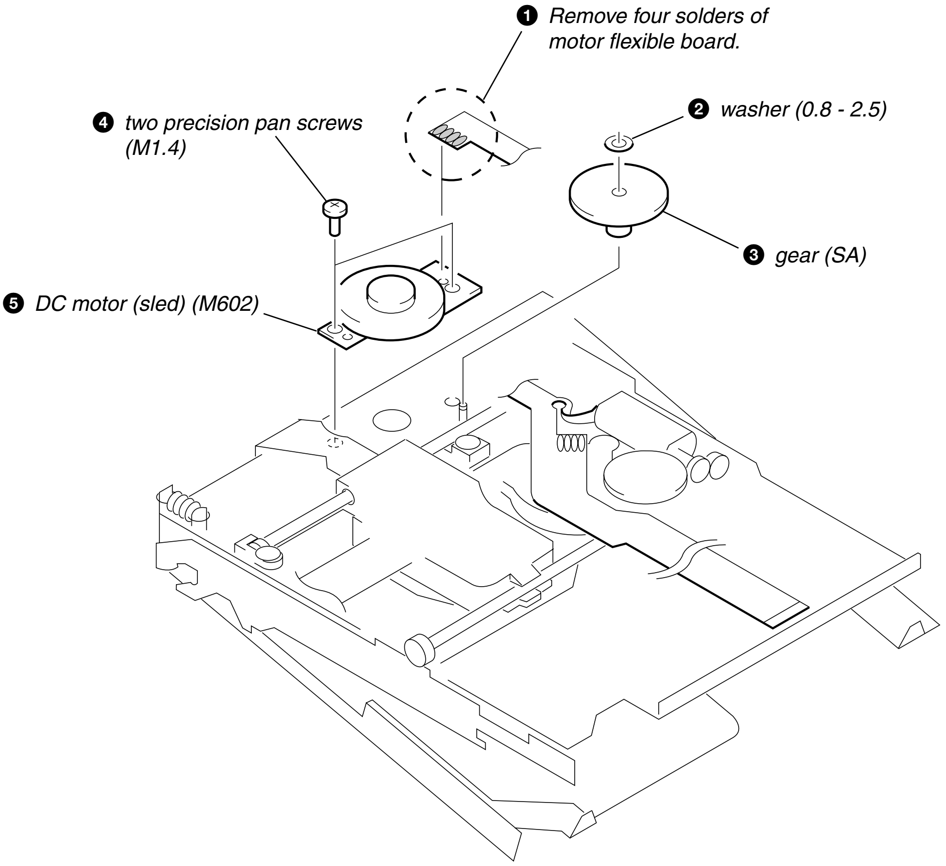
HOLDER ASSY



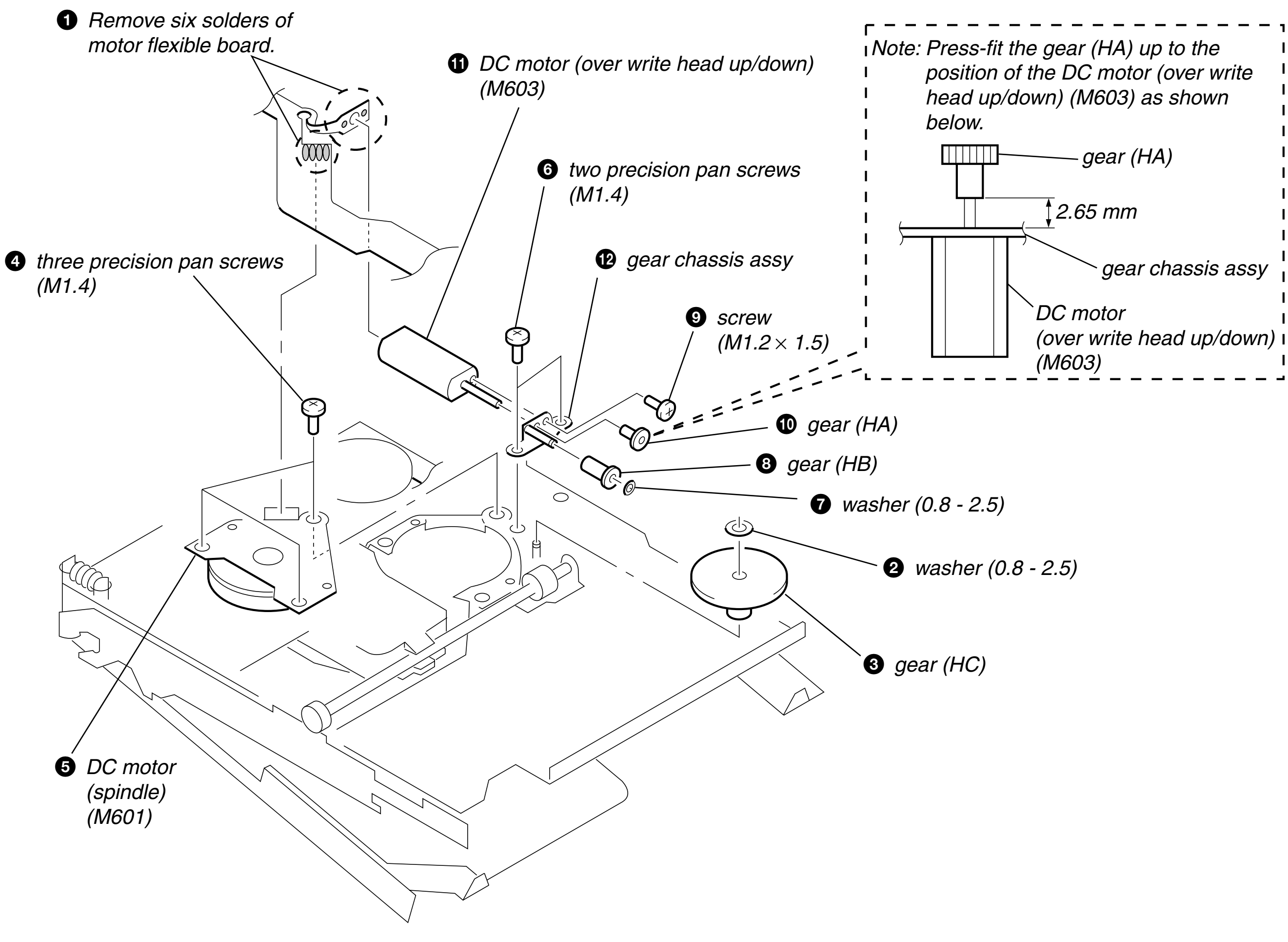
MOTOR FLEXIBLE BOARD



MOTOR, DC (SLED) (M602)



"MOTOR, DC SSM-01C14A (SPINDLE) (M601)",
"MOTOR, DC (OVER WRITE HEAD UP/DOWN) (M603)"



SECTION 4
TEST MODE

[Outline]

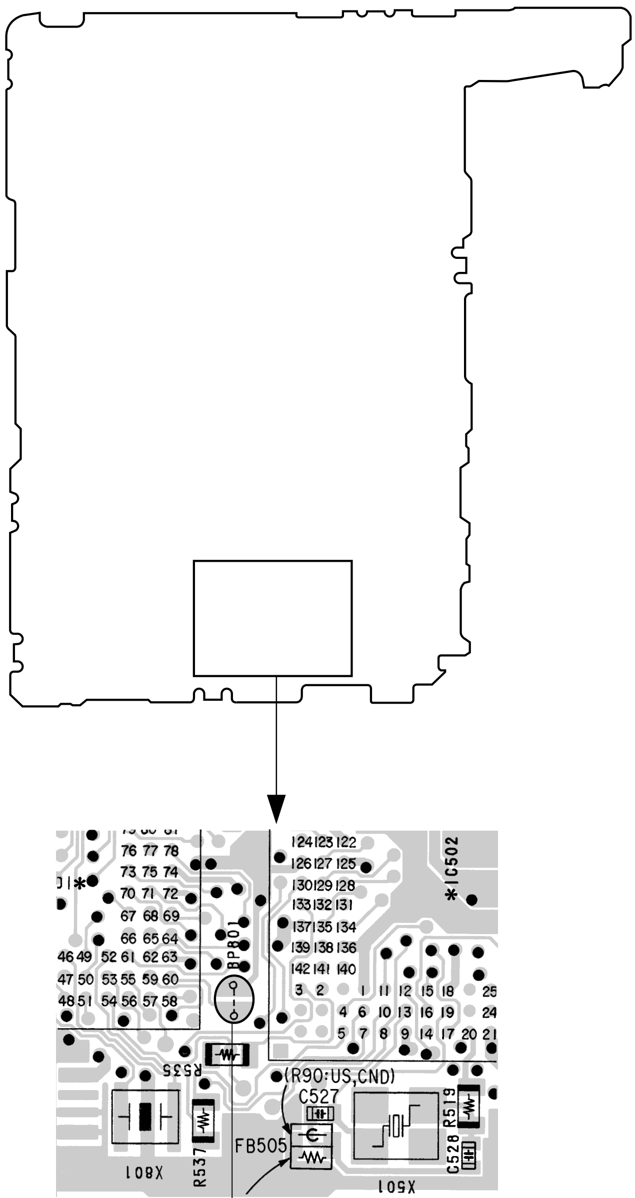
- This set provides the Overall adjustment mode (Assy mode) that allows CD and MO disc to be automatically adjusted when in the test mode. In this overall adjustment mode, the protect switch is detected to judge the disc, CD or MO, and each adjustment is automatically executed in order. If a fault is found, the system displays its location. Also, the manual mode allows each individual adjustment to be automatically adjusted.
- The keys in the description refer to the keys on both set and remote commander unless otherwise specified. Though LCD display shows the LCD of the remote commander, same contents are also displayed on the LCD of the set.

[Setting Method of Test Mode]

There are two different methods to set the test mode:

① Short BP801 (TEST) on the MAIN board with a solder bridge (connect pin ⑥⓪ of IC801 to the ground). Then, turn on the power.

– MAIN BOARD (Conductor Side) –



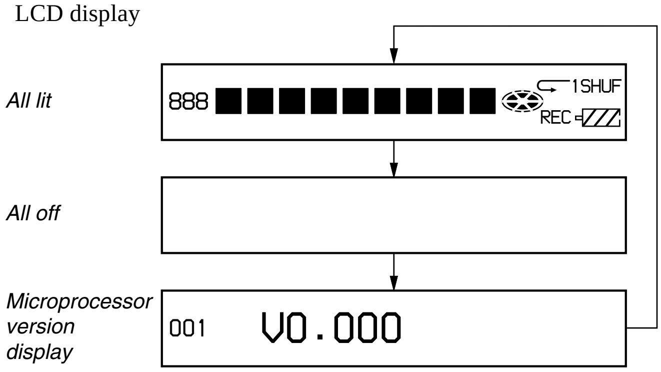
② In the normal mode, turn on the HOLD switch on the set. While pressing the ▶ key on the set, press the following set keys in the following order:

▶▶| → ▶▶| → |◀◀ → |◀◀ → ▶▶| → |◀◀ → ▶▶| → |◀◀ → II → II

[Operation in Setting the Test Mode]

- When the test mode becomes active, first the display check mode is selected. (Press ■ key once, when the display check mode is not active.)
- Other mode can be selected from the display check mode.
- When the test mode is set, the LCD repeats the following display.

LCD display



- When the II key is pressed and hold down, the display at that time is held so that display can be checked.

[Releasing the Test Mode]

For test mode set with the method ①:

Turn off the power and open the solder bridge on BP801 (TEST) on the MAIN board.

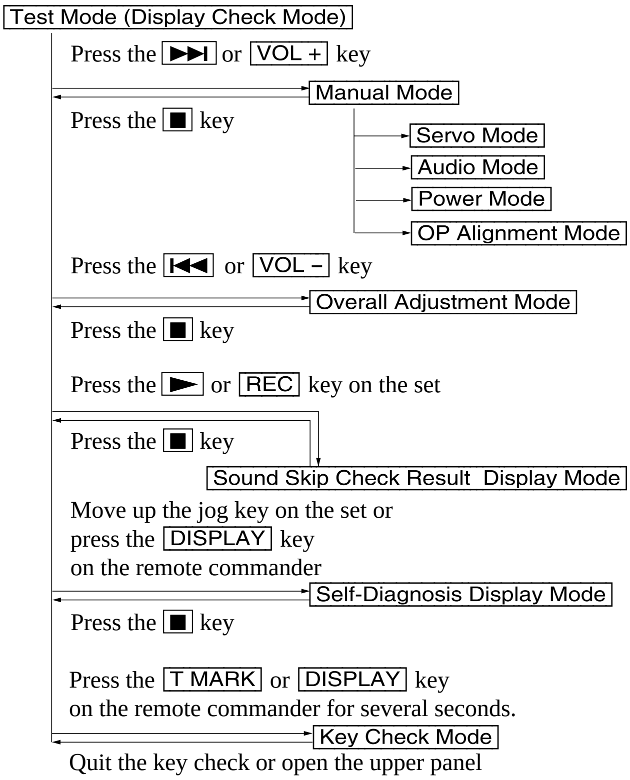
Note: Remove the solders completely. Remaining could be shorted with the chassis, etc.

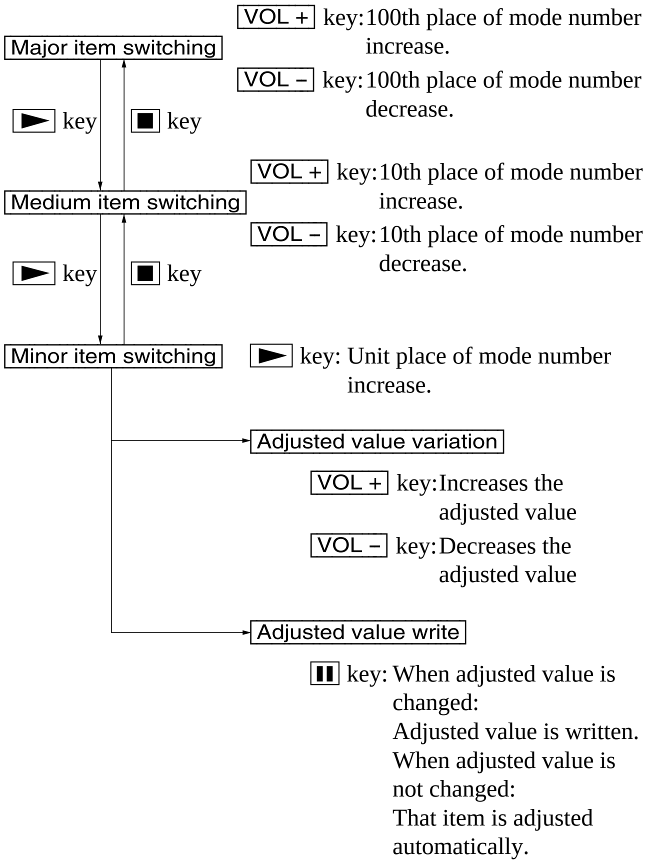
For test mode set with the method ②:

Turn off the power.

Note: If electrical adjustment (see page 18) has not been finished completely, always start in the test mode. (The set cannot start in normal mode.)

[Configuration of Test Mode]





[Manual Mode]

Mode to adjust or check the operation of the set by function.
Normally, the adjustment in this mode is not executed.

- Transition method in Manual Mode

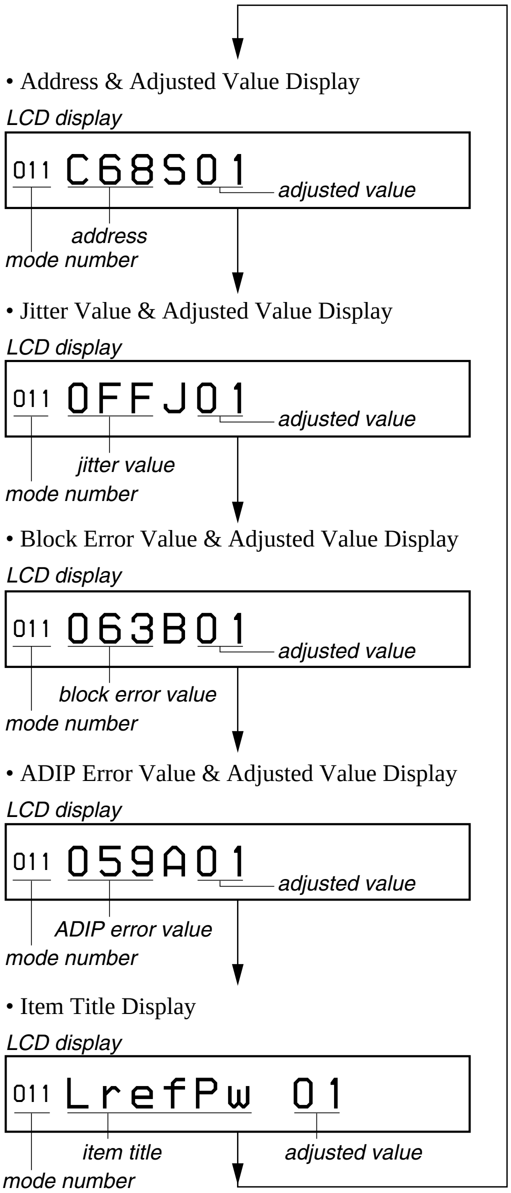
1. Setting the test mode. (See page 11)
2. Press the ▶▶I or VOL + key activates the manual mode where the LCD display as shown below.

LCD display

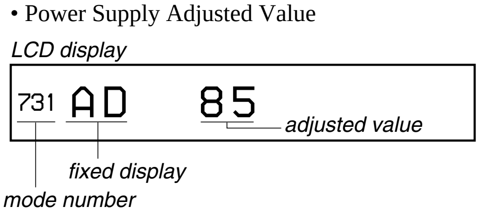


3. The optical pick-up moves outward or inward while the ▶▶I or I◀◀ key is pressed for several seconds respectively.
4. Each test item is assigned with a 3-digit mode number; 100th place is a major item, 10th place is a medium item, and unit place is a minor item.

5. The display changes a shown below each time the jog key on the set is turned up or [DISPLAY] key on the remote commander is pressed.



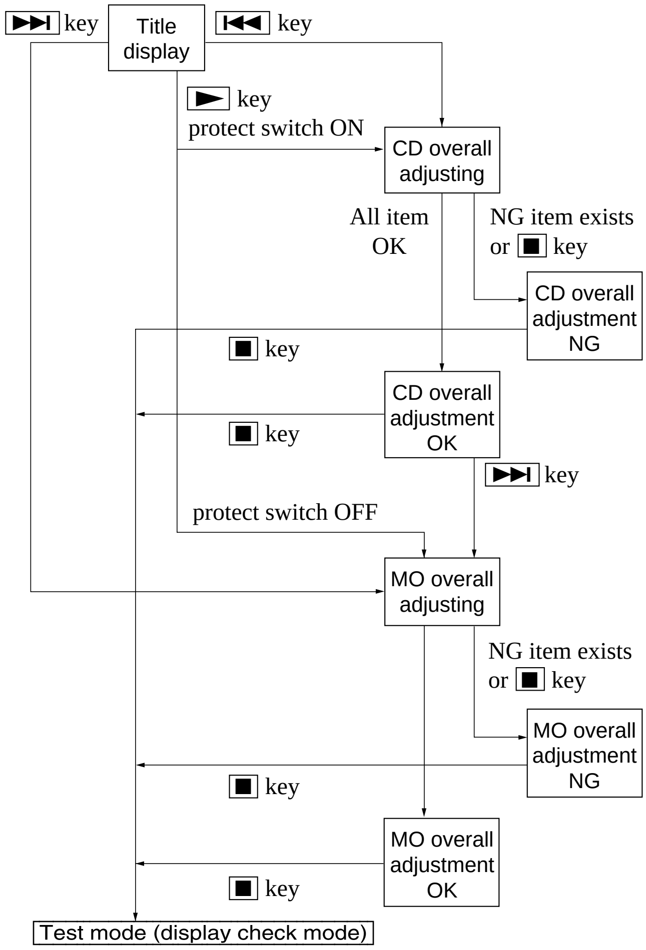
However in the power mode (mode number 700's), only the power adjustment value is displayed.



6. Quit the manual mode, and press [■] key to return to the test mode (display check mode).

[Overall Adjustment Mode]

Mode to adjust the servo automatically in all items.
Normally, automatic adjustment is executed in this mode at the repair.
Adjust the CD first, when performing adjustment.
• Configuration of overall adjustment



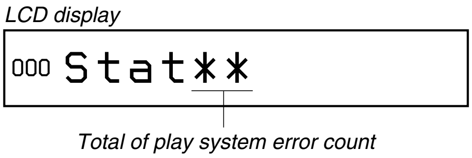
For further information, refer to the Section 5 Electrical Adjustment. (See page 18)

[Sound Skip Check Result Display Mode]

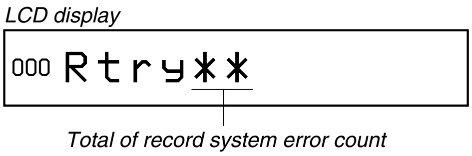
This set can display and check the error count occurring during record and play.

- **Setting method of Sound Skip Check Result Display Mode**

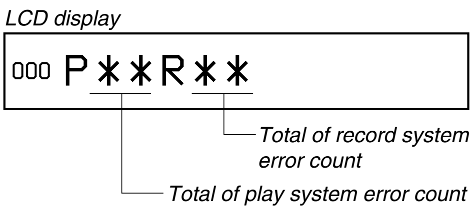
1. Setting the test mode. (See page 11)
2. Press the [►] or [REC] key on the set activates the sound skip check result display mode where the LCD displays as shown below.
   If microprocessor version is 1.20
   When [►] key is pressed:



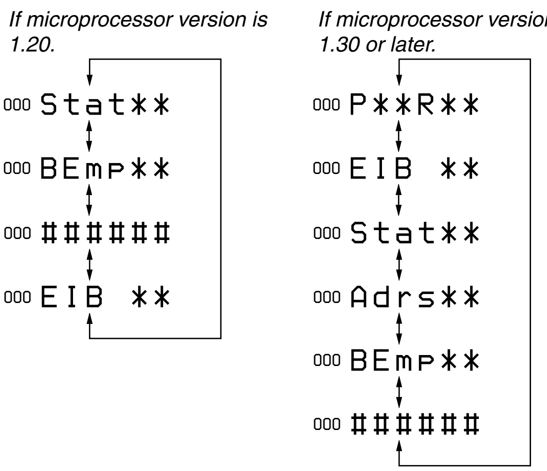
   When [REC] key on the set is pressed:



   If microprocessor version is 1.30 or later
   When [►] or [REC] key on the set is pressed:

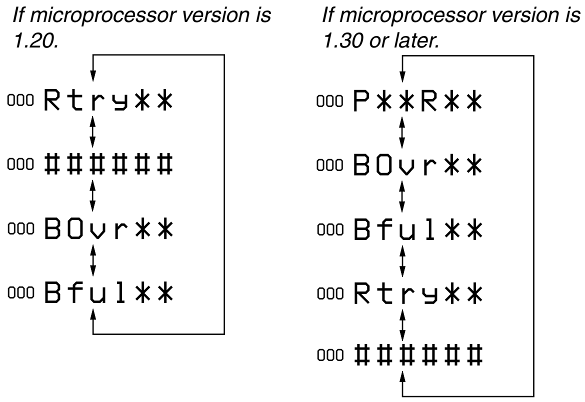


3. When [►] key is pressed, the total of error count is displayed on the LCD, and each time the [►►I] key is pressed, the error count descents one by one as shown below. Also, when [I◄◄] key is pressed, the error count ascends by one. If [REC] key on the set is pressed, the error count during record is displayed.



** : Sound skip check items counter (hexadecimal)
: 6-digit address (hexadecimal) where a sound skipped last

4. When [REC] key on the set is pressed, the total of error count is displayed on the LCD, and each time the [►►I] key is pressed, the error count descents one by one as shown below. Also, when [I◄◄] key is pressed, the error count ascends by one. If [►] key is pressed, the error count during play is displayed.



** : Sound skip check items counter (hexadecimal)
: 6-digit address (hexadecimal) where a sound skipped last

Error code

	Cause of error	Description of error
Playback	EIB	Sound error correction error
	Stat	Decorder status error
	Adrs	Cannot access the address
	BEmp	Buffer becomes empty
Recording	BOvr	Buffer becomes full and sounds are dumped
	BFul	Buffer capacity lowers and data are forcibly written
	Rtry	Retry count over

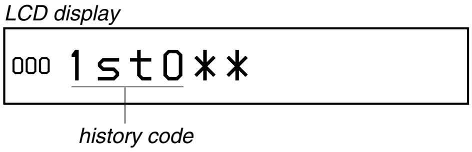
5. Quit the sound skip check result display mode, and press the [■] key to return to the test mode (display check mode).

[Self-Diagnosis Display Mode]

- This set uses the self-diagnosis system in which if an error occurs in recording/playback mode, the error is detected by the model control and power control blocks of the microprocessor and information on the cause is stored as history in EEPROM. By viewing this history in test mode, it helps you to analyze a fault and determine its location.
  Total recording time has been recorded as optical pick-up using time, and it is compared with the total recording time in the self-diagnosis display mode to find when an error occurred.
  Clear both total recording time and the time in self-diagnosis display mode, when the optical pick-up was replaced.

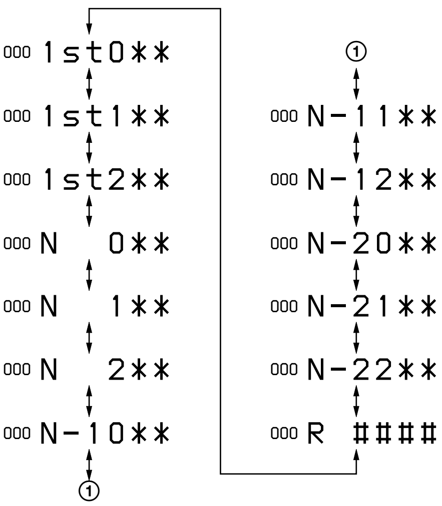
1. Setting the test mode. (See page 11)
2. Move up the jog key on the set or press the DISPLAY key on the remote commander activates the self-diagnosis display mode where the LCD display as shown below.

LCD display



** : *Self-Diagnosis Data*

3. Then, each time ►►I key is pressed, LCD display descends by one as shown below. Also, the LCD display ascends by one when I◄◄ key is pressed.



4. Quit the self-diagnosis display mode, and press the ■ key to return to the test mode (display check mode).

• Description of Indication History

History code number	Description
1st0	The first error
1st1	Total recording time when 1st0 was generated (Higher rank byte)
1st2	Total recording time when 1st0 was generated (Lower rank byte)
N 0	The last error
N 1	Total recording time when N 0 was generated (Higher rank byte)
N 2	Total recording time when N 0 was generated (Lower rank byte)
N-10	One error before the last.
N-11	Total recording time when N-10 was generated (Higher rank byte)
N-12	Total recording time when N-10 was generated (Lower rank byte)
N-20	Two errors before the last.
N-21	Total recording time when N-20 was generated (Higher rank byte)
N-22	Total recording time when N-20 was generated (Lower rank byte)
REC	Total recording time *

* Total recording time
Total recording time is recorded in minutes. It is recorded in hexadecimal format and up to 65,535 min. can be counted. It returns to “0000h” when recorder goes beyond this limit.

• Description of Error Indication Codes

Problem	Indication code	Meaning of code	Description
No error	00	No error	
Servo error	01	Illegal access target address was specified	Attempt to access an abnormal address
	02	High temperture	High temperture
	03	Focus error	Forcus could not be applied
	04	Spindle error	Abnormal lotation of disc
Power error	21	Initial low battery	Abnormal voltage at initialization
	22	Low battery	Momentary interruption detected
	23	Low battery NI	Momentary interruption detected (NiMH)
	24	Low battery AM	Momentary interruption detected (AM)

[Clearing Self-Diagnosis Data and Total Recording Time]

1. Setting the test mode. (See page 11.)
2. Move up the jog key on the set or press the [DISPLAY] key on the remote commander activates the self-diagnosis display mode.
3. Press the [❚❚] key or [REC] key on the set during display of self-diagnosis data when clearing the self-diagnosis data, or during display of total recording time when clearing the total recording time. Thus, “ClrOK?” will be displayed on the LCD, and press the same key again, and when self-diagnosis data is cleared “ErrCLR” is displayed and the data is cleared. Also when total recording time is cleared, “ ReeT O” is displayed and it is cleared.

[Key Check Mode]

This set can check if the set and remote commander function normally.

- Setting Method of Key Check Mode

1. Setting the test mode. (See page 11)
2. Press the [T MARK] or [DISPLAY] key on the remote commander for several seconds activates the key check mode where all segments of LCD turn OFF. (At the last two digits of DOT section, AD value of remote commander key line is displayed in hexadecimal)
3. When each key is pressed, it is displayed on the LCD, implying that it was successfully checked as shown below. However, for the slide switch on the set, it is not checked unless it is reciprocated.

   * The key pressed to enter the key check mode was already checked at that time.

Set key

Key	Indication
►	PLAY
►►I	FF
I◄◄	FR
II	PAUSE
VOL +	VOL +
VOL –	VOL –
■	STOP
REC	REC
END SEARCH	END S
Jog (up)	JOG+
Jog (down)	JOG–
Jog (push)	PUSH
T MARK	T MARK
HOLD (hold)	HLDon
HOLD (off)	HLDoff
SYNCHRO REC (on)	SYCon
SYNCHRO REC (off)	SYCoff

Remote commander key

Key	Indication
►/►►I	rPLAY
I◄◄	rFR
II	rPAUSE
VOL +	rVOL +
VOL –	rVOL –
■	rSTOP
PLAYMODE	rPMODE
DISPLAY	rDISP

4. The test mode (display check mode) is automatically activated when all keys on the set and remote commander were checked (see above). Also, the test mode (display check mode) gets back if opening the upper panel during a key check.

SECTION 5
ELECTRICAL ADJUSTMENTS

[Outline]

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode. (See page 11)
  However, before starting automatic adjustment, the memory clear, power adjustment and temperature adjustment must be performed in the manual mode.
- The keys in the description refer to the keys on both set and remote commander unless otherwise specified.
  Though LCD display shows the LCD of the remote commander, same contents are also displayed on the LCD of the set.

[Precautions for Adjustment]

1. Adjustment must be done in the test mode only.
   After adjusting, release the test mode.
2. Use the following tools and measuring instruments.
   - Test CD disc TDYS-1
     (Part No. : 4-963-646-01)
     Available SONY CD disc
   - Recorded MO disc PTDM-1
     (Part No. : J-2501-054-A)
     Available SONY MO disc (recorded)
   - Laser power meter LPM-8001
     (Part No. : J-2501-046-A)
   - Digital voltmeter
3. Unless specified otherwise, supply DC 3V from the DC IN 3V jack.
4. Switch position
   HOLD switch .... OFF

[Adjustment Sequence]

Adjustment must be done with the following steps.

Step	Mode
1. NV Reset (Memory clear) ↓ 2. Power Supply Manual Adjustment ↓ 3. Temperature correction	Manual Mode
↓	
4. CD Overall Adjustment ↓ 5. MO Overall Adjustment	Overall Mode

[NV Reset]

- **Setting method of NV reset**

1. Select the manual mode of test mode, and set mode number 021NV Reset.

   LCD display

   021 ResNV

2. Press the II key.

   LCD display

   021 ResOK?

3. Press the II key once more.

   LCD display

   021 Res***

   ↓ NV reset (after several seconds)

   021 Reset!

4. Quit the manual mode, and activate the test mode.

[Power Supply Manual Adjustment]

- **Adjustment sequence**

Adjustment must be done with the following steps.

1. VC PWM Duty (L) adjustment (mode number: 762)
   ↓
2. VREM PWM Duty (H) adjustment (mode number: 763)
   ↓
3. VREM PWM Duty (L) adjsutment (mode number: 764)
   ↓
4. VC PWM Duty (H) adjustment (mode number: 765)
   ↓
5. VREM PWM Duty (H) adjustment (mode number: 766)
   ↓
6. VREM PWM Duty (L) adjustment (mode number: 767)

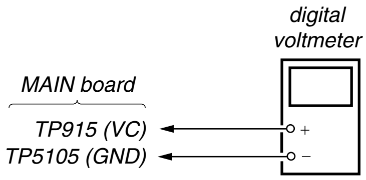
- **Adjustment method of VC PWM Duty (L) (mode number: 762)**

1. Select the manual mode of the test mode, and set the mode number 762. (See page 12)

LCD display

```
762 VclPWM
```

2. Connect a digital voltmeter to the TP915 (VC) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.02 V. Proceed to the next step without pressing [❚❚] key if voltage is already adjusted.



3. Press the [❚❚] key to write the adjusted value.

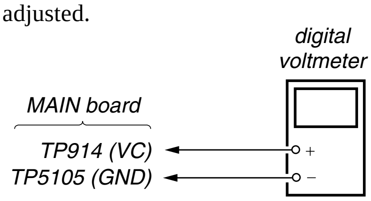
- **Adjustment method of VREM PWM Duty (H) (mode number: 763)**

1. Select the manual mode of the test mode, and set the mode number 763. (See page 12)

LCD display

```
763 VrhVcl
```

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.75 ± 0.02 V. Proceed to the next step without pressing [❚❚] key if voltage is already adjusted.



3. Press the [❚❚] key to write the adjusted value.

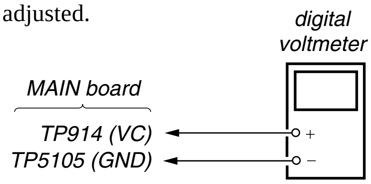
- **Adjustment method of VREM PWM Duty (L) (mode number: 764)**

1. Select the manual mode of the test mode, and set the mode number 764. (See page 12)

LCD display

```
764 VrlVcl
```

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.02 V. Proceed to the next step without pressing [❚❚] key if voltage is already adjusted.



3. Press the [❚❚] key to write the adjusted value.

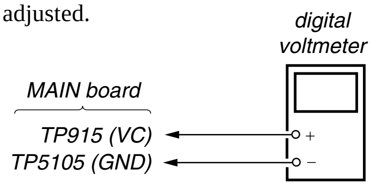
- **Adjustment method of VC PWM Duty (H) (mode number: 765)**

1. Select the manual mode of the test mode, and set the mode number 765. (See page 12)

LCD display

```
765 VchPWM
```

2. Connect a digital voltmeter to the TP915 (VC) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.75 ± 0.02 V. Proceed to the next step without pressing [❚❚] key if voltage is already adjusted.



3. Press the [❚❚] key to write the adjusted value.

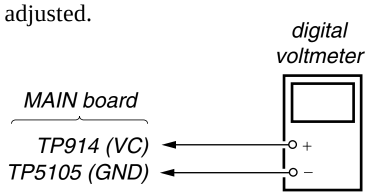
- **Adjustment method of VREM PWM Duty (H) (mode number: 766)**

1. Select the manual mode of the test mode, and set the mode number 766. (See page 12)

LCD display

```
766 VrhVch
```

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.75 ± 0.02 V. Proceed to the next step without pressing [❚❚] key if voltage is already adjusted.



3. Press the [❚❚] key to write the adjusted value.

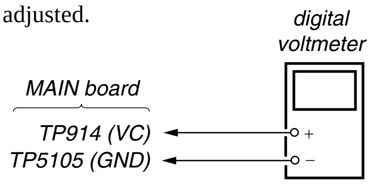
- **Adjustment method of VREM PWM Duty (L) (mode number: 767)**

1. Select the manual mode of the test mode, and set the mode number 767. (See page 12)

LCD display

```
767 VrlVch
```

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.02 V. Proceed to the next step without pressing [❚❚] key if voltage is already adjusted.



3. Press the [❚❚] key to write the adjusted value.

[Temperature Correction]

- **Adjustment Method of temperature correction**

1. Select the manual mode of test mode, and set the mode number 014. (See page 12)

   LCD display

   ```
   014 SetTmp
   ```

2. Measure the ambient temperature.
3. Adjust with [VOL +], [VOL –] key so that the adjusted value (hexadecimal value) becomes the ambient temperature. (Initial value: 14h = 20 °C, Adjusting range: 80h to 7fh (–128 °C to +127 °C)
4. Press the [❚❚] key to write the adjusted value.

[Overall Adjustment Mode]

- **Adjustment Method of Overall Adjustment Mode**

1. Setting the test mode. (See page 11)
2. Press the [|◀◀] or [VOL –] key activates the overall adjustment mode where the LCD display as shown below.

   LCD display

   ```
   000 ASSY**
   ```

   : (DISC MARK) When power adjustment "H" finished; Outward ON
   When power adjustment "L" finished; Inward ON
   Power supply is not yet adjusted unless both outward and inward disc marks are ON.
   Note: Disc mark is displayed on the remote commander LCD only.

   *** : Left side = MO auto adjustment information*
   F : Auto adjustment finished
   1 : Manual adjustment remains
   0 : Not adjusted yet
   Right side = CD auto adjustment information
   F : CD auto adjustment finished
   1 : Manual adjustment remains (not auto adjustment)
   0 : Not adjusted yet

3. Insert the CD test disc TDYS-1 (Parts No.4-963-646-01) or an available SONY CD disc.
4. Press [▶] key. The system discriminates between CD and MO and performs automatic adjustment for CD. Also, if [|◀◀] key is pressed, CD is adjusted automatically.

   LCD display

   ```
   ::: CD RUN
   ```

   ::: : Manual mode number being executed

- CD Automatic Adjustment item

Mode No.	Description
312	CD electrical offset adjustment
313	
314	
328	CD TWPP gain adjustment
321	CD tracking error gain adjustment
323	CD tracking error offset adjustment
332	
336	CD ABCD level adjustment
344	CD focus gain adjustment
345	CD tracking gain adjustment
521	CD two-axis sensibility adjustment
522	
341	CD focus bias adjustment

5. If the result of automatic adjustment is OK, the following display appears in the LCD:

   LCD display

   ```
   341 CD OK
   ```

6. If the result of automatic adjustment is NG, the following display appears in the LCD:

   LCD display

   ```
   ### NG
   ```

   ### : Overall adjustment. NG mode number

7. If NG, set the manual mode. Perform automatic adjustment for the items not accepted. (See page 12)
8. If CD adjustment is OK, insert an available SONY MO disc (recorded). At this time, be sure to turn OFF the disc protect switch.
9. Press [▶] key. The system discriminates between CD and MO and performs automatic adjustment for the MO disc. Also, if [▶▶|] key is pressed, MO is adjusted automatically. However, when CD adjustment is not finished, "SetCD!" is blinking on the LCD and MO adjustment is not executed.

   LCD display

   ```
   ::: MO RUN
   ```

   ::: : Manual mode number being executed

• MO Automatic Adjustment item

Mode No.	Description
112	MO electrical offset adjustment
113	
114	
118	
221	Lower reflection CD tracking error gain adjustment
223	Lower reflection CD tracking error offset adjustment
232	
236	Lower reflection CD ABCD level adjustment
244	Lower reflection CD focus gain adjustment
245	Lower reflection CD tracking gain adjustment
121	MO tracking error gain adjustment
122	MO tracking error offset adjustment
134	MO TWPP gain adjustment
131	MO double speed read TWPP offset adjustment
132	
136	MO ABCD level adjustment
144	MO focus gain adjustment
145	MO tracking gain adjustment
434	MO write TWPP gain adjustment
431	MO write TWPP offset adjustment
432	
436	MO write ABCD level adjustment
445	MO write tracking gain adjustment
411	MO normal speed read TWPP offset adjustment
412	
448	32 cluster full recording
141	MO focus bias adjustment

10. If the result of automatic adjustment is OK, the following display appears in the LCD:

LCD display

```
141 MO  OK
```

11. If the result of automatic adjustment is NG, the following display appears in the LCD:

LCD display

```
    ### NG
```

###: Overall adjustment. NG mode number

12. If NG, set the manual mode. Perform automatic adjustment for the items not accepted. (See page 12)
13. To clear the data in overall adjustment mode, set the manual mode and change the mode number 021 (Res NV) to reset the NV. (See page 12)
14. When both CD and MO overall adjustments are OK, set the manual mode and clear the clock data.
For the microprocessor version 1.20 or later, set the mode number 043 (Resume), and press the ⏸ key.

LCD display

```
043 Resume
```

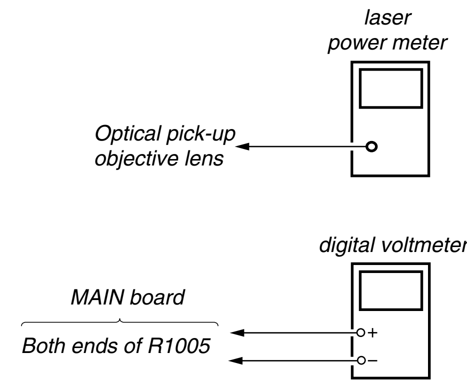
↓ Press the ⏸ key, historical data clear

```
043 ResClr
```

Note: In step 10, set the clock data to 99Y11M11D11H11M00S, and in step 14, do not set the clock.

[Laser Power Check]

Connection :

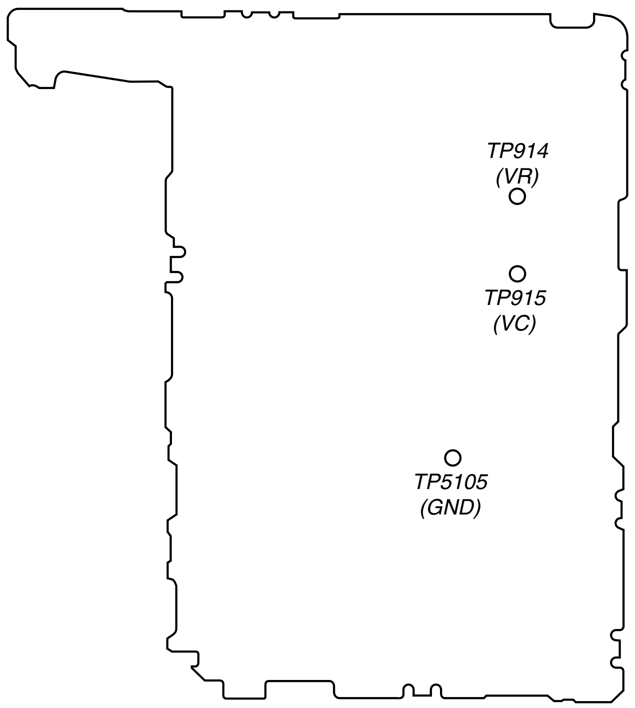


Check Method :

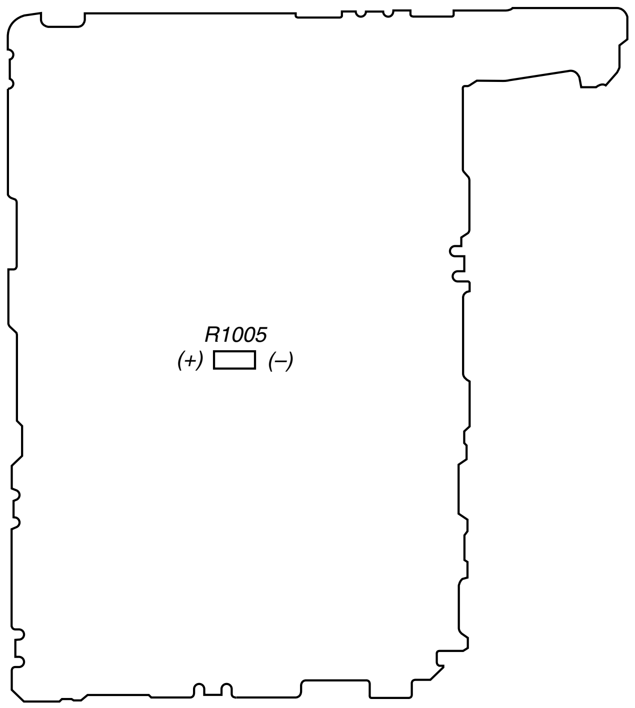
1. Select the manual mode of test mode, and set the laser power adjusting mode. (mode number 010)
2. Press the ⏮ key continuously until the optical pick-up moves to the most inward track.
3. Open the cover and set the laser power meter on the objective lens of the optical pick-up.
4. Press the ▶ key, and set the laser MO read adjustment mode. (mode number 011)
5. Check that the laser power meter reading is 0.81 ± 0.08 mW.
6. Check that the voltage both ends of resitor R1005 at this time is below 44 mV.
7. Press the ▶ key, and set the laser CD read adjustment mode. (mode number 012)
8. Check that the laser power meter reading is 0.97 ± 0.10 mW.
9. Check that the voltage both ends of resitor R1005 at this time is below 44 mV.
10. Press the ▶ key, and set the laser MO write adjustment mode. (mode number 013)
11. Check that the laser power meter reading is 4.95 ± 0.50 mW.
12. Check that the voltage both ends of resister R1005 at this time is below 80 mV.
13. Press the ■ key.
14. Release the test mode.

Connecting Location:

– MAIN BOARD (Component Side) –

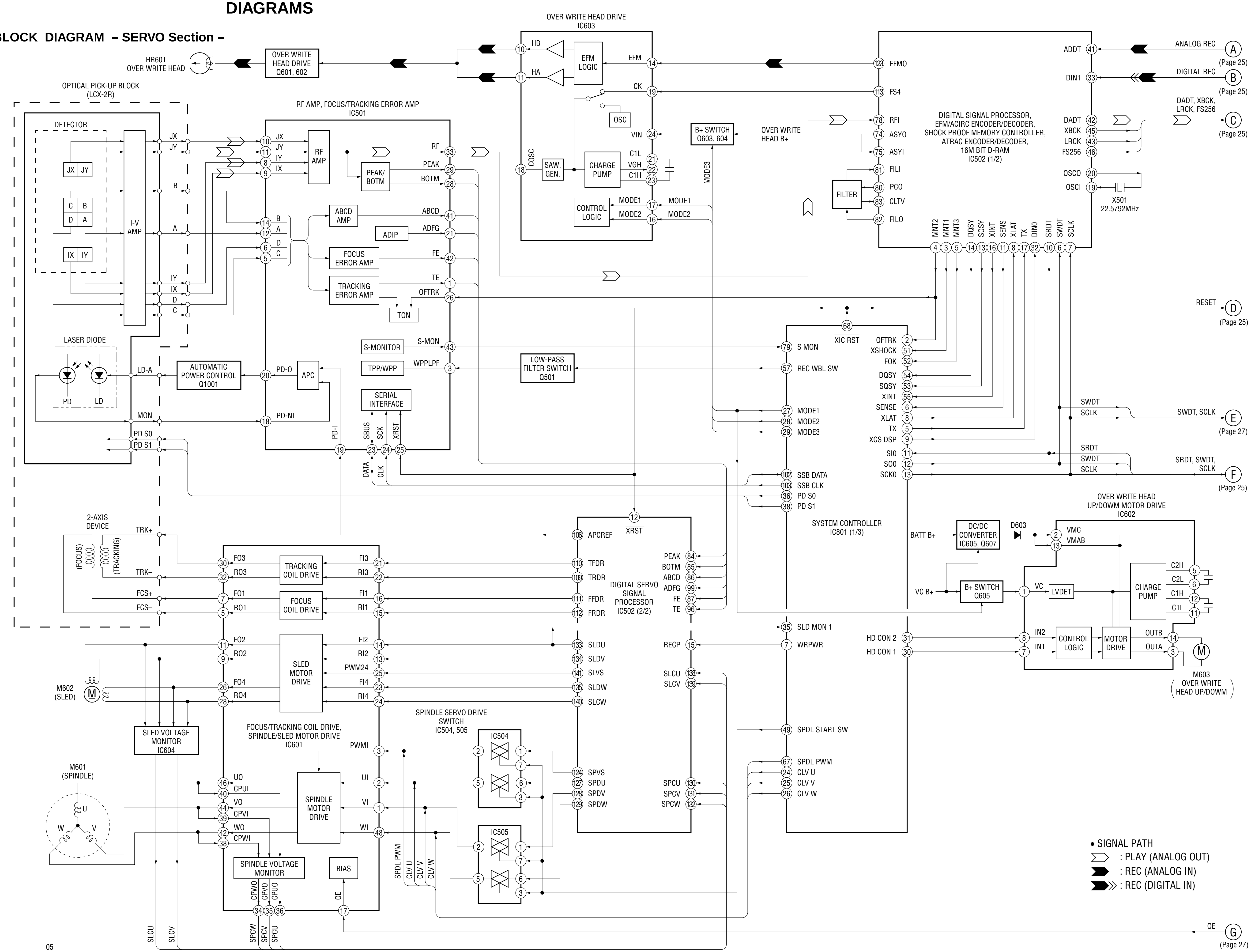


– MAIN BOARD (Conductor Side) –

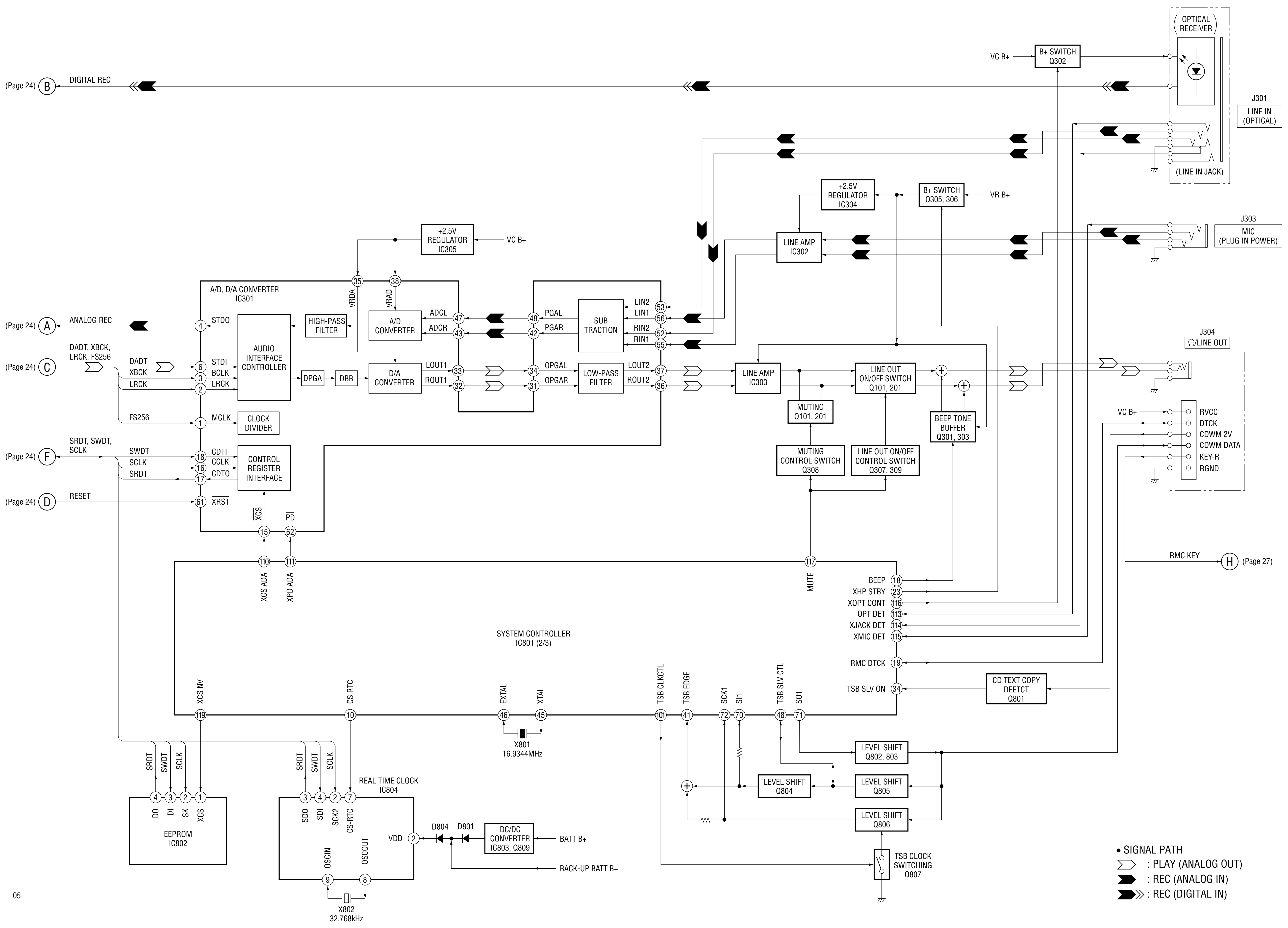


SECTION 6
DIAGRAMS

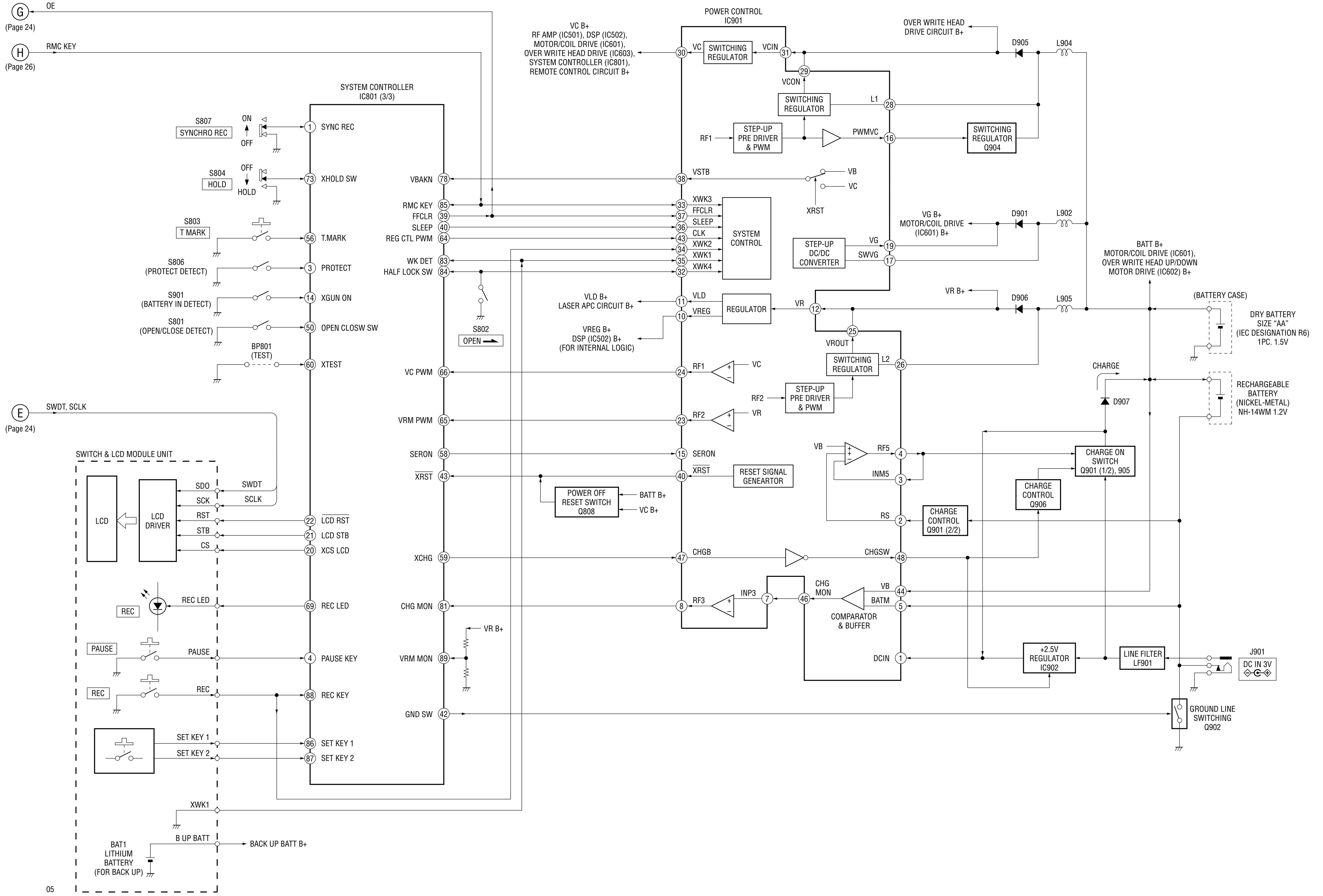
6-1. BLOCK DIAGRAM – SERVO Section –



6-2. BLOCK DIAGRAM – A/D, D/A CONVERTER, AUDIO Section –



6-3. BLOCK DIAGRAM – KEY CONTROL/DISPLAY/POWER SUPPLY Section –



• Semiconductor Location

Ref. No.	Location
D301	B-10
D302	B-9
D303	C-4
D304	B-10
D501	G-10
D600	F-6
D601	F-9
D602	G-6
D603	H-9
D801	E-12
D802	F-12
D803	D-11
D804	F-11
D901	D-7
D902	C-9
D903	E-9
D905	C-11
D906	C-11
D907	D-11
IC301	C-12
IC302	C-13
IC303	B-11
IC304	B-4
IC305	D-13
IC501	F-10
IC502	G-12
IC504	E-11
IC505	E-12
IC601	E-12
IC602	H-9
IC603	G-9
IC604	F-12
IC605	G-9
IC801	H-11
IC802	H-10
IC803	E-11
IC804	G-11
IC901	D-10
IC902	C-10
Q101	B-9
Q102	B-11
Q201	C-10
Q202	B-11
Q301	B-10
Q302	C-13
Q303	B-10
Q305	C-11
Q306	H-9
Q307	C-10
Q308	B-11
Q309	B-10
Q501	E-11
Q601	F-9
Q602	F-9
Q603	G-7
Q604	H-9
Q605	G-9
Q607	H-9
Q801	G-13
Q802	F-13
Q803	F-13
Q804	F-13
Q805	F-13
Q806	F-12
Q807	F-13
Q809	D-11
Q901	C-6
Q902	D-9
Q904	C-11
Q905	C-6
Q906	C-10
Q1001	E-11

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ▭ : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬ : B+ Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PLAYBACK
  ( ) : RECORD
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : PLAYBACK (ANALOG OUT)
  : PLAYBACK (ANALOG IN)
  : RECORD (DEGITAL IN)
- Abbreviation
  CND : Canadian model
  FR : French model
  HK : Hong Kong model
  JEW : Tourist model

∗ IC502 and IC801 are not replaceable

- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different form that of conventional IC.

Note on Printed Wiring Board:

- o—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ░ : Pattern from the side which enables seeing.

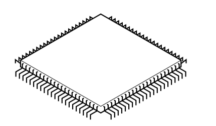
(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- Main board is four-layer printed board. However, the patterns of layers 2 and 3 have not been included in this diagrams.

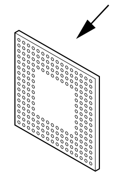
∗ IC502 and IC801 are not replaceable

- Lead Layouts



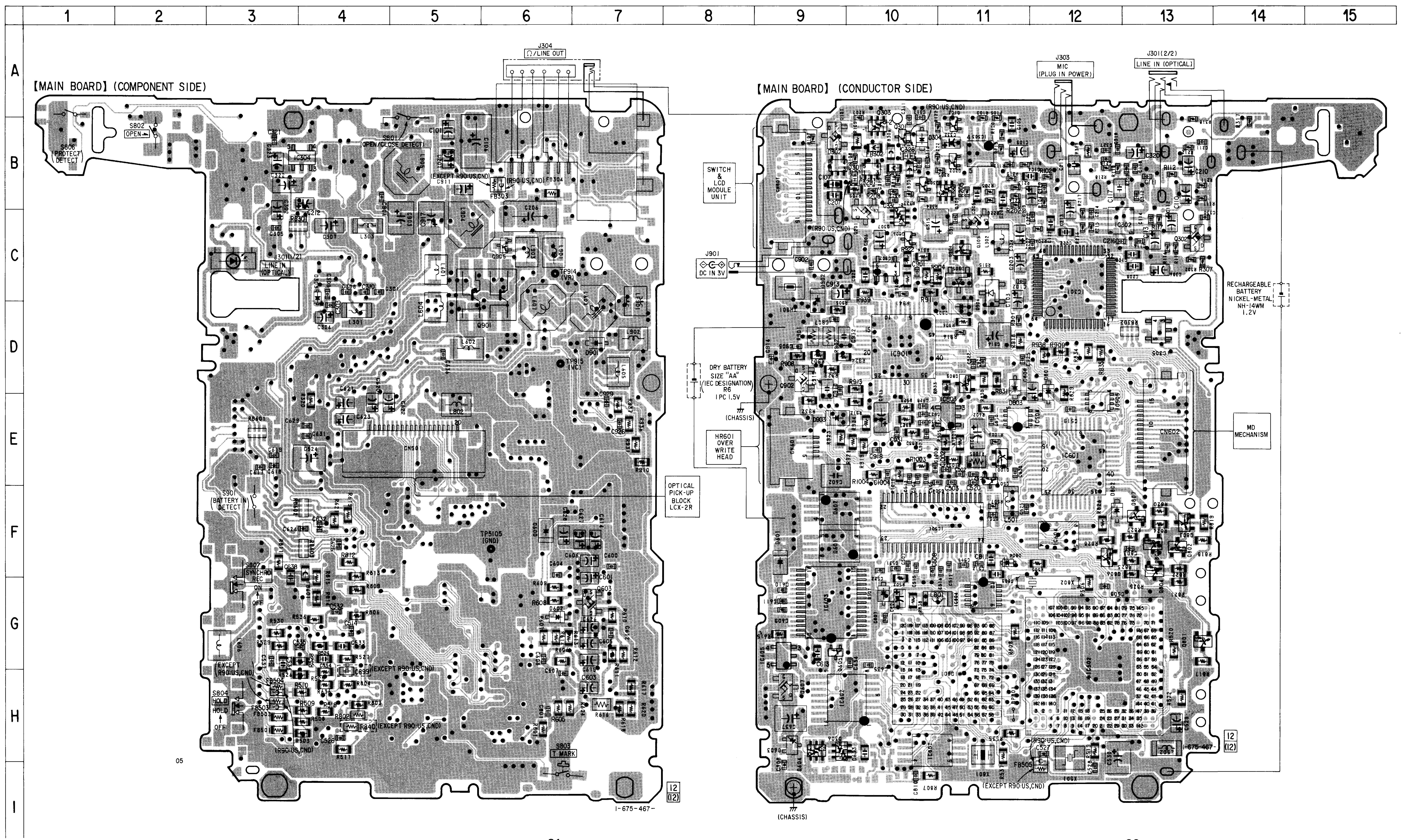
Lead layout of conventional IC

surface




CSP (chip size package)

6-4. PRINTED WIRING BOARD



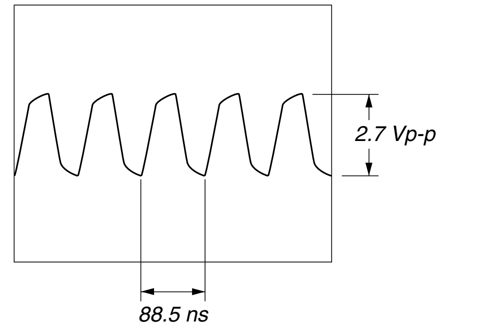
6-5. SCHEMATIC DIAGRAM

• See page 38 for Waveforms. • See page 41 for IC Block Diagrams.

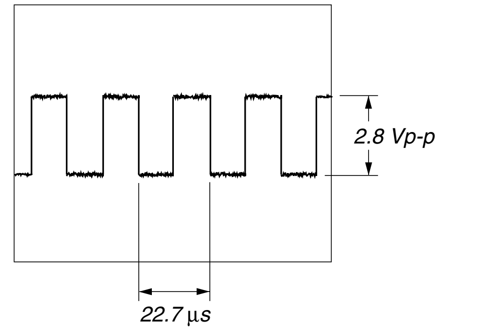


• **Waveforms**

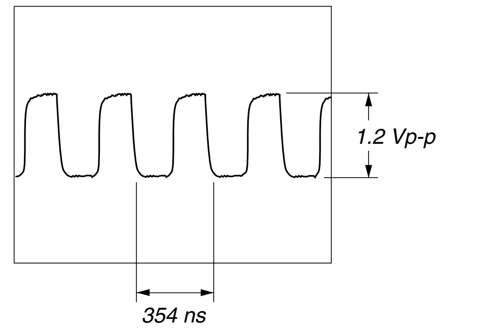
❶ IC301 ① (MCLK), IC502 ㊵ (FS256)
1 V/DIV, 50 ns/DIV



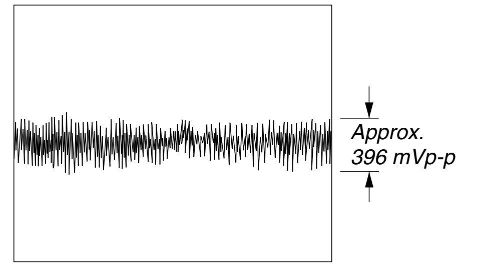
❷ IC301 ② (LRCK), IC502 ㊸ (LRCK)
1 V/DIV, 10 μs/DIV



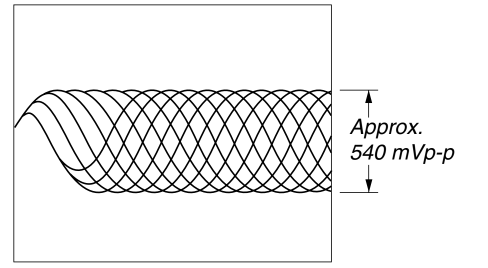
❸ IC301 ③ (BCLK), IC502 ㊹ (XBCK)
400 mV/DIV, 200 ns/DIV



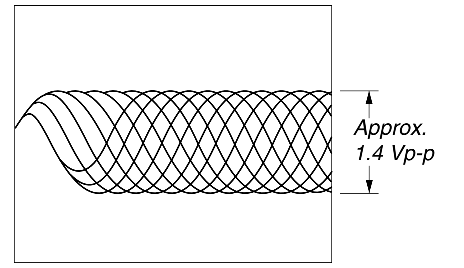
❹ IC501 ① (TE), IC502 ⑯ (TE)
(PLAY Mode)
200 mV/DIV, 1 μs/DIV



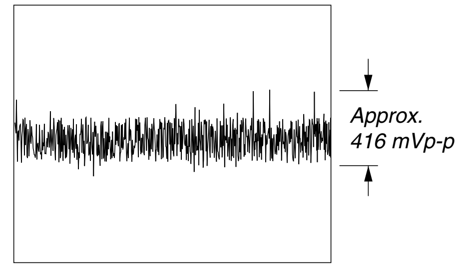
❺ IC501 ⑧, ⑨, ⑩, ⑪ (IY, IX, JX,JY)
(PLAY Mode)
200 mV/DIV, 500 ns/DIV



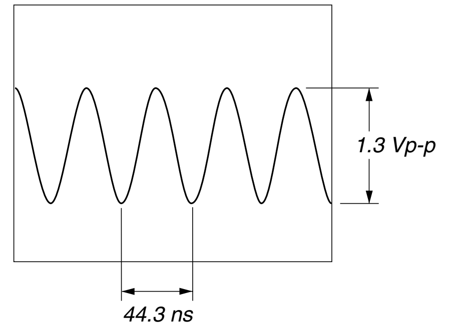
❻ IC501 ㊳ (RF), IC502 ⑲ (RFI) (PLAY Mode)
400 mV/DIV, 1 μs/DIV



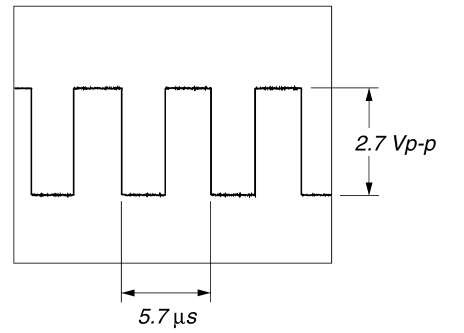
❼ IC501 ㊷ (FE), IC502 ㉑ (FE) (PLAY Mode)
200 mV/DIV, 1 μs/DIV



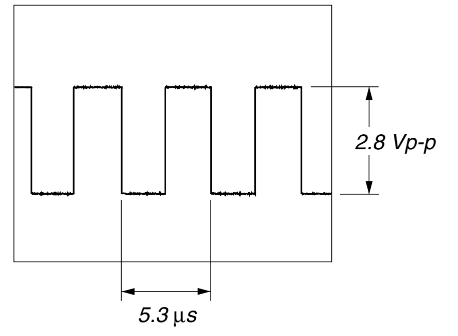
❽ IC502 ㉓ (OSCO)
400 mV/DIV, 20 ns/DIV



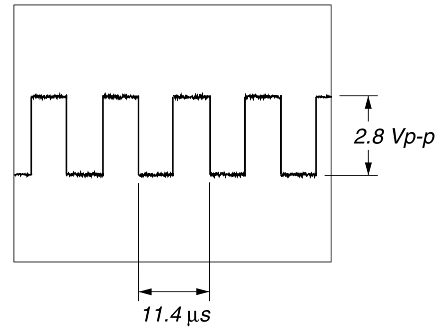
❾ IC502 ⑬ (FS4), IC603 ⑲ (CK)
1 V/DIV, 2 μs/DIV



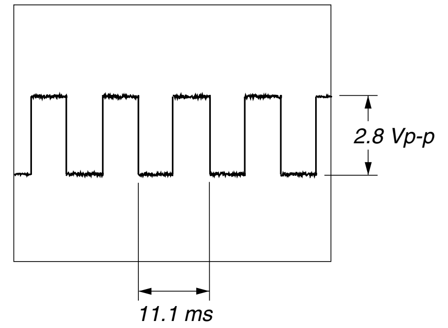
❿ IC502 ⑬ (SPVS), IC504 ①, ②
IC601 ③ (PWMI), IC801 ㊼ (SPDL PWM)
(PLAY Mode)
1 V/DIV, 2 μs/DIV



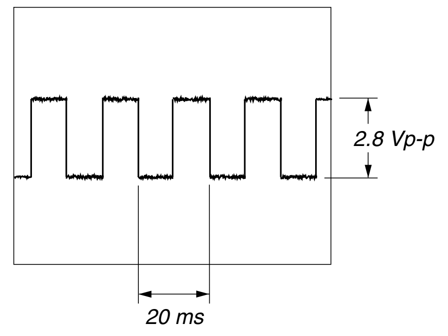
⓫ IC502 ⑬ (SPVS), IC504 ①, ②
IC601 ③ (PWMI), IC801 ㊼ (SPDL PWM)
(REC Mode)
1 V/DIV, 5 μs/DIV



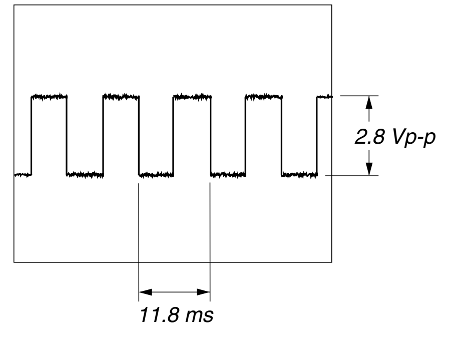
⓬ IC502 ⑦, ⑧, ⑨ (SPDU, SPDV, SPDW)
IC504 ⑤, ⑥, IC505 ①, ②, ⑤, ⑥
IC601 ①, ②, ㊽ (VI, UI, WI)
IC801 ㉔, ㉕, ㉖ (CLV U, CLV V, CLV W)
(PLAY Mode)
1 V/DIV, 5 ms/DIV



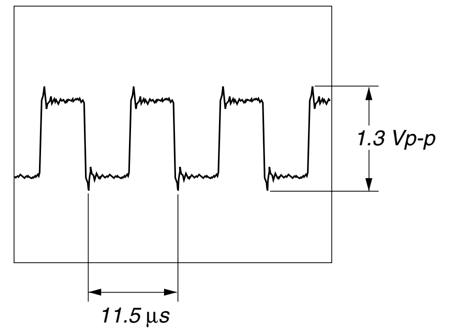
⓭ IC502 ⑦, ⑧, ⑨ (SPDU, SPDV, SPDW)
IC504 ⑤, ⑥, IC505 ①, ②, ⑤, ⑥
IC601 ①, ②, ㊽ (VI, UI, WI)
IC801 ㉔, ㉕, ㉖ (CLV U, CLV V, CLV W)
(REC Mode)
1 V/DIV, 10 ms/DIV



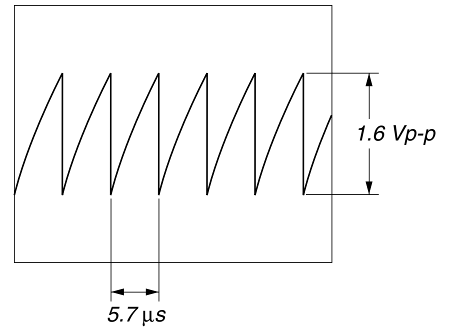
⓮ IC502 ③, ⑦, ⑩ (SPCU, SPCV, SPCW)
IC601 ㉔, ㉙, ㉚ (COWO, COVO, COUO)
1 V/DIV, 5 ms/DIV



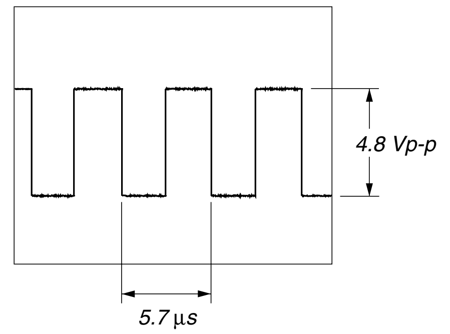
⓯ IC601 ㊲, ㊳, ㊴, ㊵ (COM,
CPWI, CPVI, CPUI)
400 mV/DIV, 5 μs/DIV



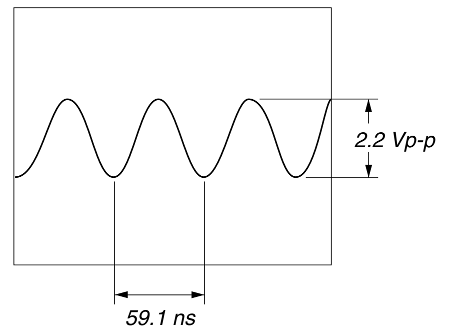
⓰ IC603 ⑬ (COSC) (REC Mode)
400 mV/DIV, 5 μs/DIV



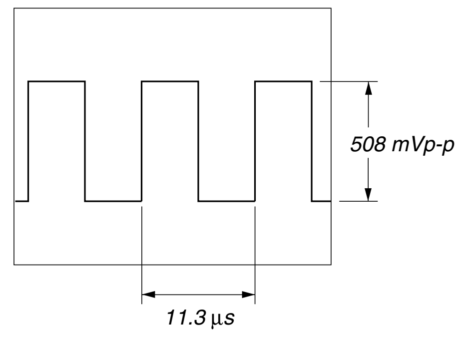
⓱ IC603 ㉑, ㉓ (CIH, CIL) (REC Mode)
2 V/DIV, 2 μs/DIV



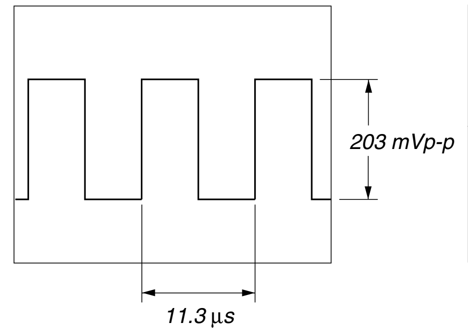
⓲ IC801 ㊹ (XTAL)
1 V/DIV, 20 ns/DIV



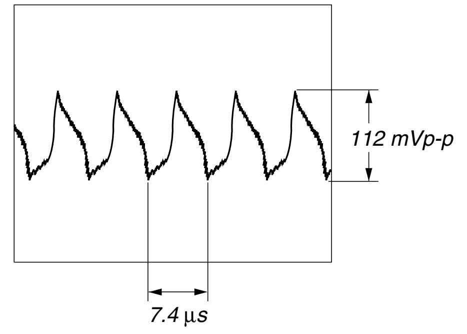
⓳ IC801 ㊾ (VRM PWM)
100 mV/DIV, 5 μs/DIV



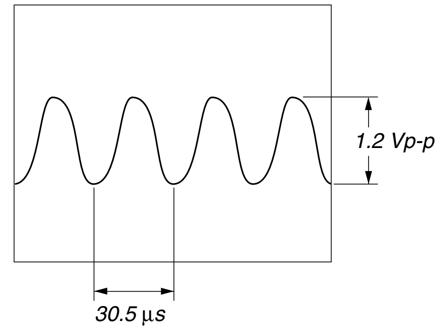
⓴ IC801 ㊿ (VC PWM)
40 mV/DIV, 5 μs/DIV



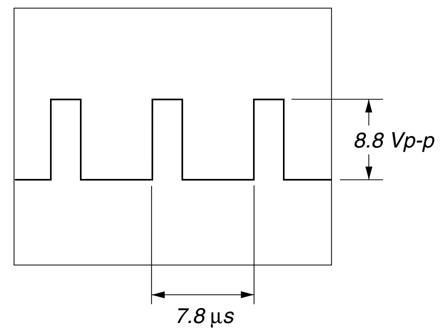
㉑ IC803 ⑤ (LX)
50 mV/DIV, 5 μs/DIV



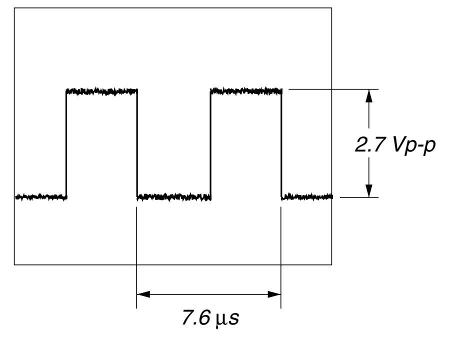
㉒ IC804 ⑧ (OSCOUT)
500 mV/DIV, 20 μs/DIV



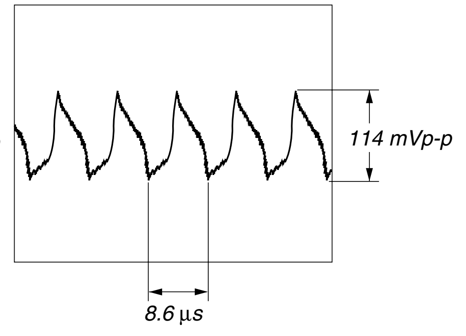
㉓ IC901 ⑲ (PWMVC), Q904 (Gate)
5 V/DIV, 2 μs/DIV



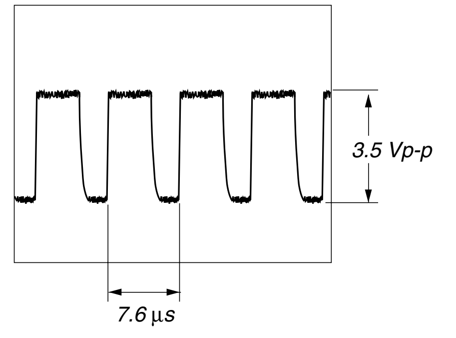
㉔ IC901 ㊶ (CLK)
1 V/DIV, 2 μs/DIV



㉕ Q607 (Drain)
50 mV/DIV, 5 μs/DIV

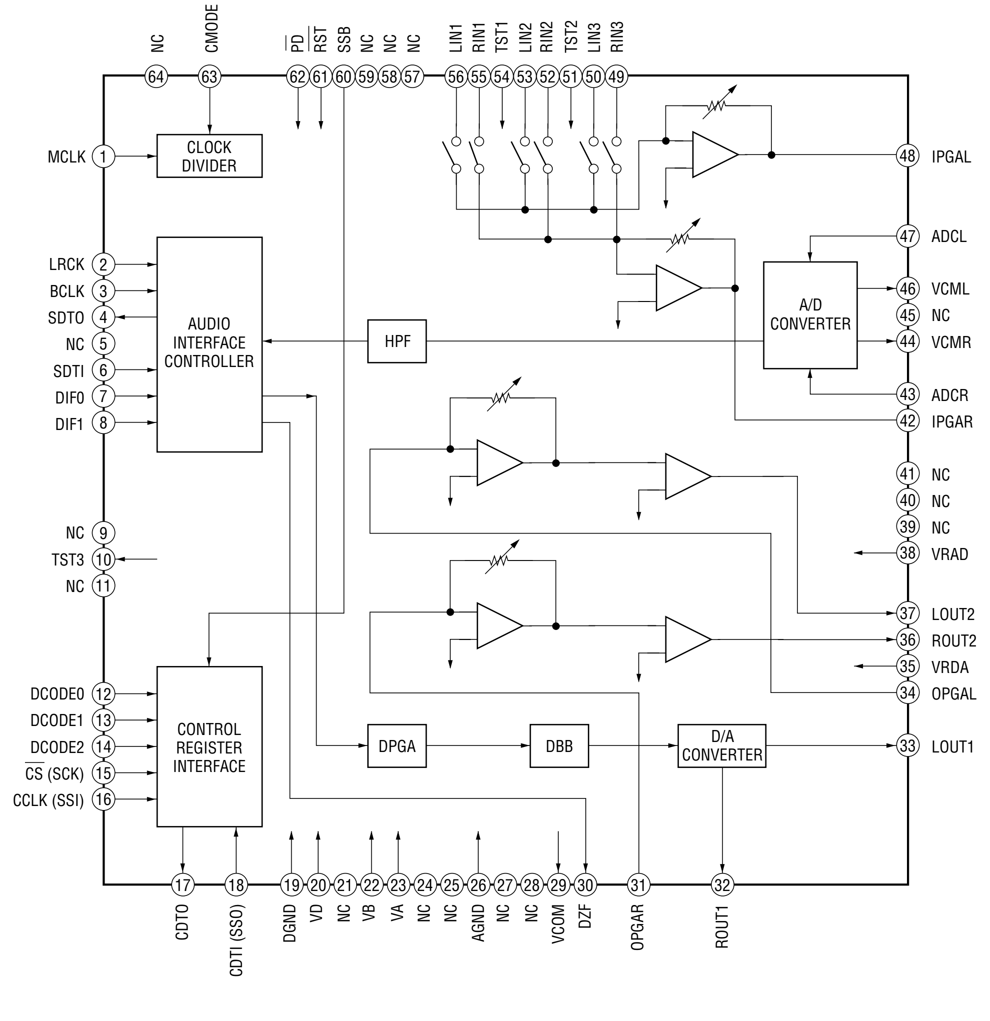


㉖ Q904 (Drain)
1 V/DIV, 5 μs/DIV

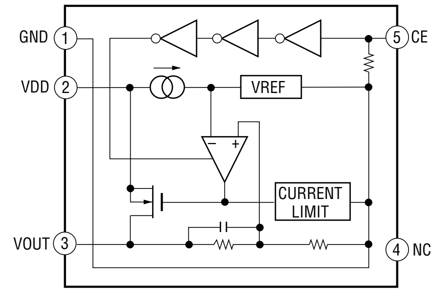


• **IC Block Diagrams**

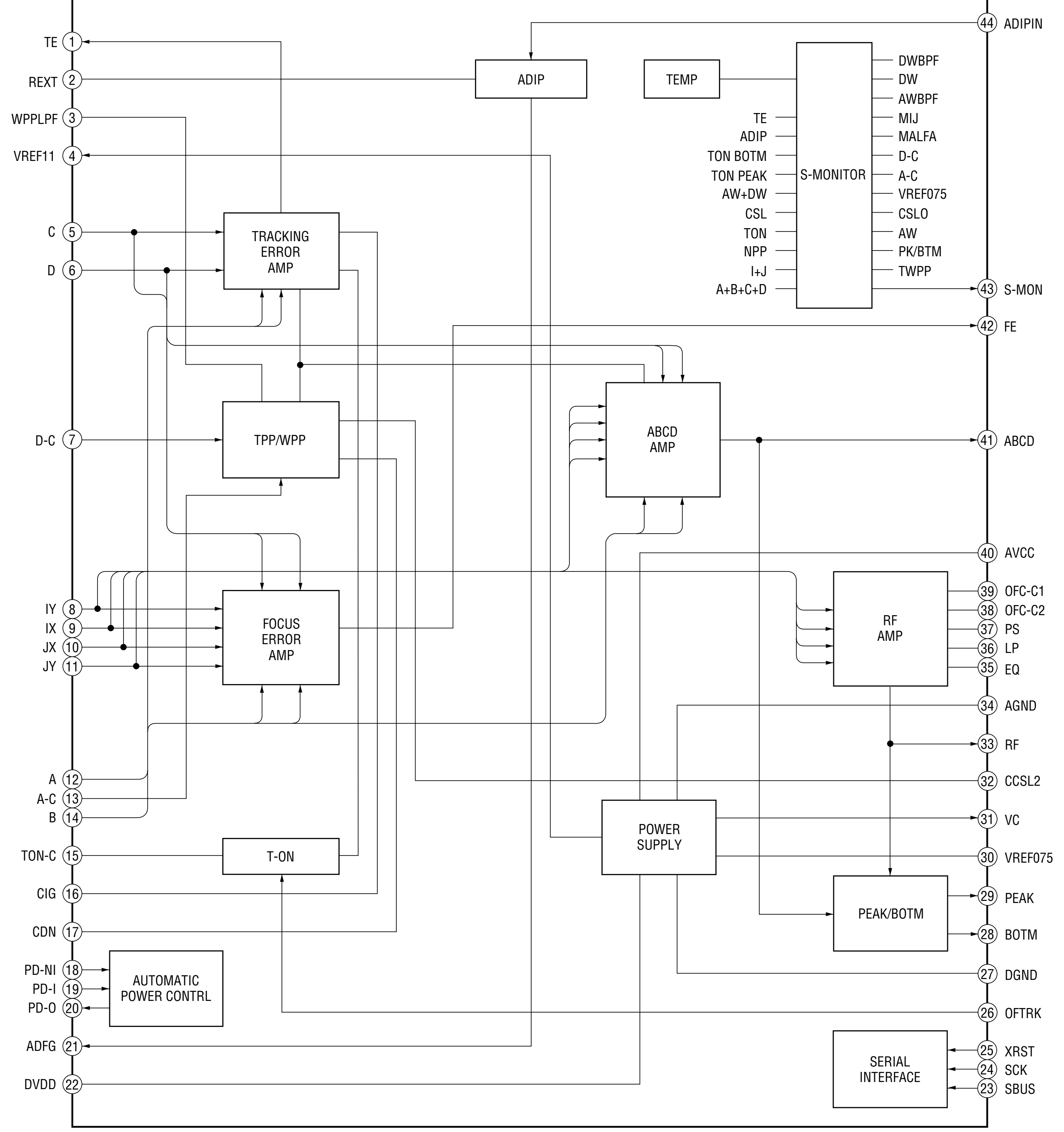
IC301 AK4517BVQ-L



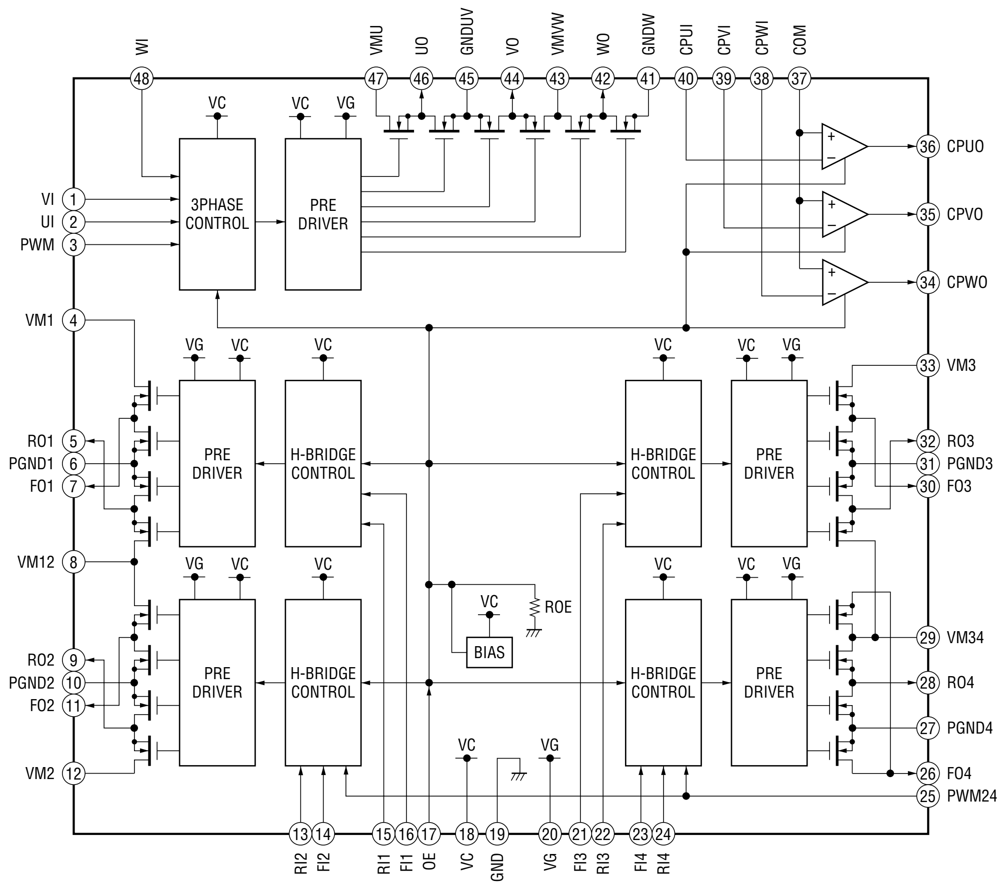
IC304, 305 RN5RZ25AA-TR



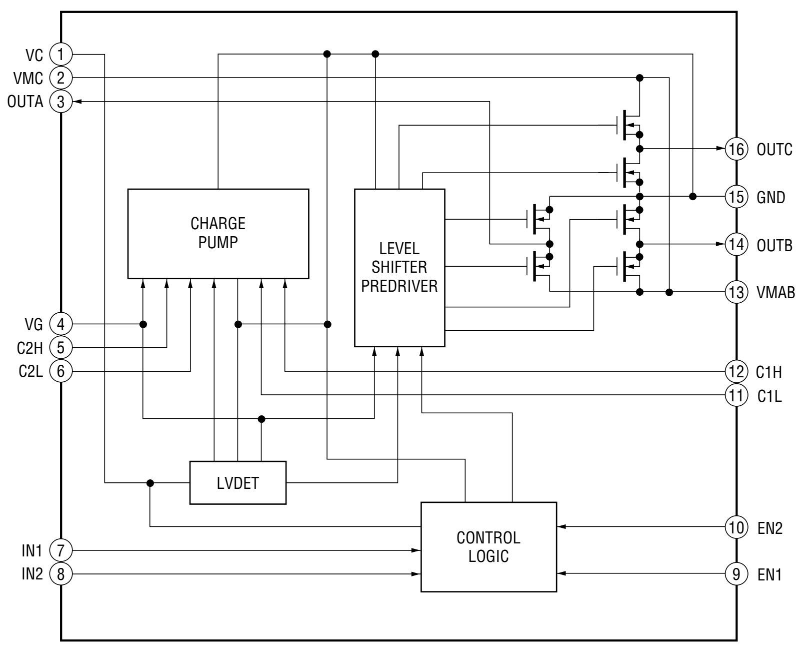
IC501 SN761056ADBT



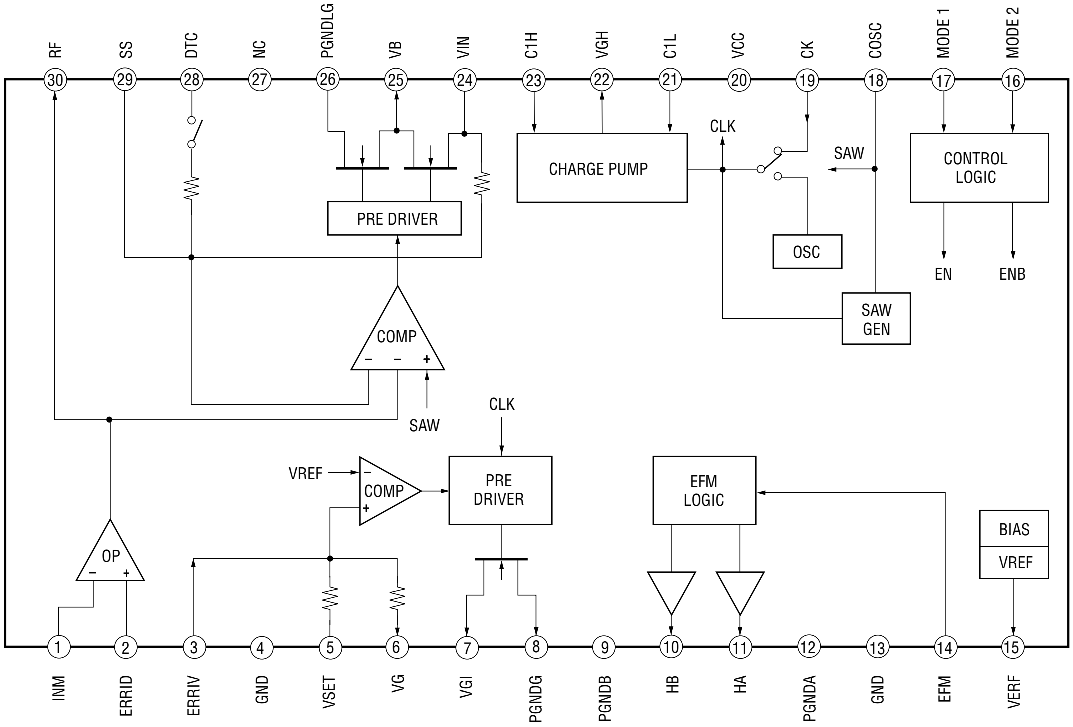
IC601　MPC17A56FTA



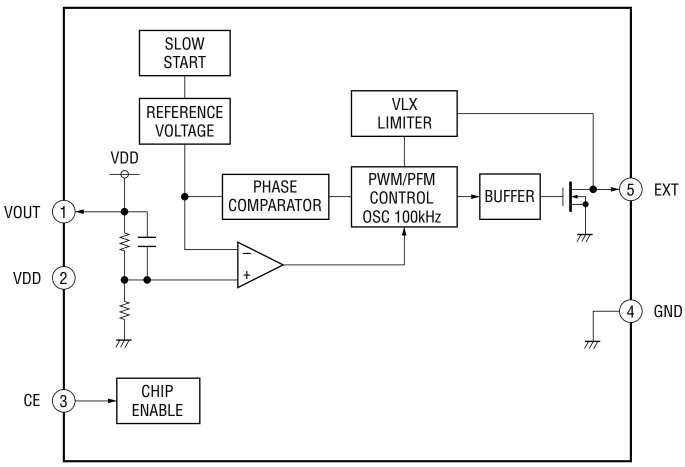
IC602　MPC17A17XDTBR2



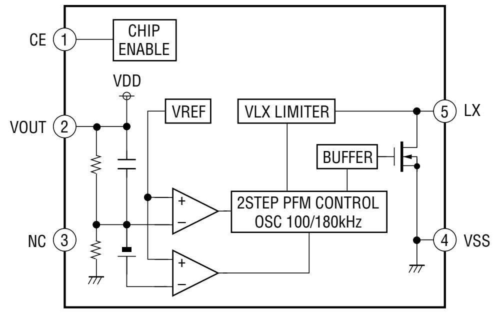
IC603 MPC18A20MTAEL



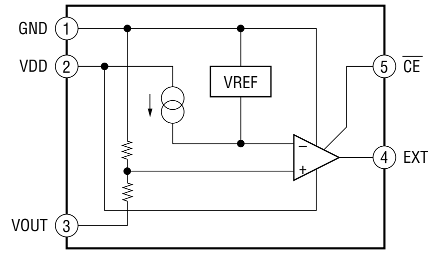
IC605 XC6367B103MR



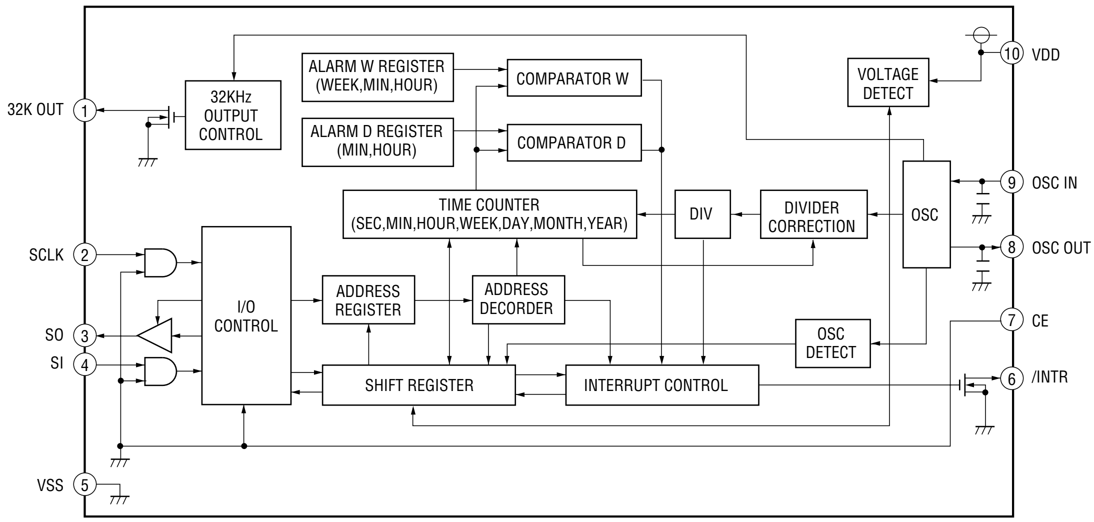
IC803 XC6383C301MR



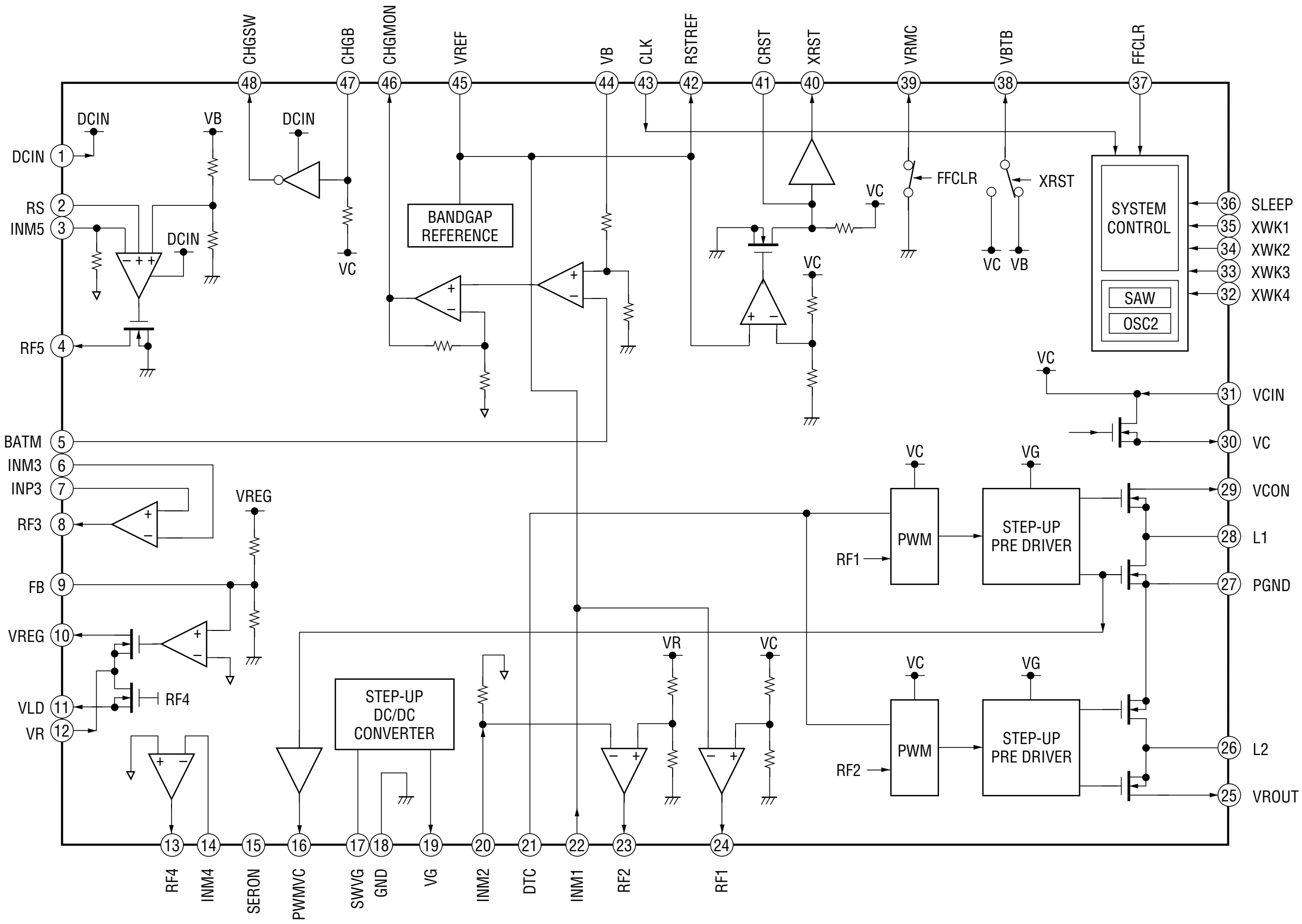
IC902 RN5RG25AA-TR



IC804 RV5C348A-E2



IC901 MPC18A31FTA



6-6. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC501 SN761056ADBT (RF AMP, FOCUS/TRACKING ERROR AMP)

Pin No.	Pin Name	I/O	Description
1	TE	O	Tracking error signal output to the CXD2660GA (IC502)
2	REXT	—	Connected to the external resistor for the ADIP amplifier control
3	WPPLPF	—	Connected to the external capacitor for low-pass filter of the TPP/WPP
4	VREF11	O	Reference voltage output terminal (+1.1V)
5	C	I	Signal input from the optical pick-up detector (C)
6	D	I	Signal input from the optical pick-up detector (D)
7	D-C	I	Signal input from the optical pick-up detector (D) (AC input)
8	IY	I	I-V converted RF signal IY input from the optical pick-up block detector
9	IX	I	I-V converted RF signal IX input from the optical pick-up block detector
10	JX	I	I-V converted RF signal JX input from the optical pick-up block detector
11	JY	I	I-V converted RF signal JY input from the optical pick-up block detector
12	A	I	Signal input from the optical pick-up detector (A)
13	A-C	I	Signal input from the optical pick-up detector (A) (AC input)
14	B	I	Signal input from the optical pick-up detector (B)
15	TON-C	—	Connected to the external capacitor for the TON hold
16	CIG	—	Connected to the external capacitor for low-pass filter of the NPP divider denominator
17	CDN	—	Connected to the external capacitor for low-pass filter of the CSL divider denominator
18	PD-NI	I	Light amount monitor input terminal (non-invert input)
19	PD-I	I	Light amount monitor input terminal (invert input)
20	PD-O	O	Light amount monitor output terminal
21	ADFG	O	ADIP duplex FM signal (22.05 kHz ± 1 kHz) output to the CXD2660GA (IC502)
22	DVDD	—	Power supply terminal (+2.4V) (digital system)
23	SBUS	I/O	Two-way SSB serial data bus with the system controller (IC801)
24	SCK	I	SSB serial clock signal input from the system controller (IC801)
25	$\overline{\text{XRST}}$	I	Reset signal input from the system controller (IC801) "L": reset
26	OFTRK	I	Off track signal input from the CXD2660GA (IC502)
27	DGND	—	Ground terminal (digital system)
28	BOTM	O	Light amount signal (RF/ABCD) bottom hold output to the CXD2660GA (IC502)
29	PEAK	O	Light amount signal (RF/ABCD) peak hold output to the CXD2660GA (IC502)
30	VREF075	—	Connected to the external capacitor for the internal reference voltage
31	VC	O	Middle point voltage (+1.2V) generation output terminal
32	CCSL2	—	Connected to the external capacitor for low-pass filter of the TPP/WPP
33	RF OUT	O	Playback EFM RF signal output to the CXD2660GA (IC502)
34	AGND	—	Ground terminal (analog system)
35	EQ	—	Connected to the external capacitor for the RF equalizer
36	LP	—	Connected to the external capacitor for the RF equalizer
37	PS	—	Connected to the external capacitor for the RF equalizer
38	OFC-2	—	Connected to the external capacitor for the RF AC coupling
39	OFC-1	—	Connected to the external capacitor for the RF AC coupling
40	AVCC	—	Power supply terminal (+2.4V) (analog system)
41	ABCD	O	Light amount signal (ABCD) output to the CXD2660GA (IC502)
42	FE	O	Focus error signal output to the CXD2660GA (IC502)
43	S-MON	O	Servo signal monitor output to the system controller (IC801)
44	ADIP-IN	I	ADIP duplex FM signal (22.05 kHz ± 1 kHz) input terminal Not used

• **MAIN BOARD IC502 CXD2660GA**
(DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO SIGNAL PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER, 16M BIT D-RAM)

Pin No.	Pin Name	I/O	Description
1	VDC0	—	Power supply terminal (+1.8V) (for internal logic)
2	MNT0	I/O	Not used (open)
3	MNT1	O	Recording shock detect signal output to the system controller (IC801)
4	MNT2	O	Off track signal output to the SN761056ADBT (IC501) and system controller (IC801)
5	MNT3	O	Focus OK signal output to the system controller (IC801) “H”: is output when focus is on (“L”: NG)
6	SWDT	I	Serial data input from the system controller (IC801)
7	SCLK	I (S)	Serial clock signal input from the system controller (IC801)
8	XLAT	I (S)	Serial data latch pulse input from the system controller (IC801)
9	VSC0	—	Ground terminal (for internal logic)
10	SRDT	O (3)	Serial data output to the system controller (IC801)
11	SENS	O (3)	Internal status (SENSE) output to the system controller (IC801)
12	$\overline{\text{XRST}}$	I (S)	Reset signal input from the system controller (IC801) “L”: reset
13	SQSY	O	Subcode Q sync (SCOR) output the system controller (IC801) “L” is output every 13.3 msec Almost all, “H” is output
14	DQSY (MTFLGL)	O	Digital In U-bit CD format subcode Q sync (SCOR) output to the system controller (IC801) “L” is output every 13.3 msec Almost all, “H” is output
15	RECP	I	Laser power selection signal input from the system controller (IC801) “L”: playback mode, “H”: recording mode
16	XINT	O	Interrupt status output to the system controller (IC801)
17	TX	I	Recording data output enable signal input from the system controller (IC801) Writing data transmission timing input
18	VDIO0	—	Power supply terminal (+2.4V) (for I/O)
19	OSCI	I	System clock (512Fs=22.5792 MHz) input terminal
20	OSCO	O	System clock (512Fs=22.5792 MHz) output terminal
21	VSIO0	—	Ground terminal (for I/O)
22 to 29	NC	—	Not used (open)
30	VSC1	—	Ground terminal (for internal logic)
31	XTSL	I	Input terminal for the system clock frequency setting “L”: 45.1584 MHz, “H”: 22.5792 MHz (fixed at “H” in this set)
32	XCS_DSP	I	Chip select signal input from the system controller (IC801)
33	DIN1	I	Digital audio signal input terminal when recording mode
34	DOUT	O	Digital audio signal output terminal when playback mode Not used (open)
35	DT72	O	Not used (open)
36, 37	VDC1, VDC2	—	Power supply terminal (+1.8V) (for internal logic)
38	DATAI	I	Serial data input terminal Not used (fixed at “L”)
39	LRCKI	I	L/R sampling clock signal (44.1 kHz) input terminal “L”: Rch, “H”: Lch Not used (fixed at “L”)
40	XBCKI	I	Serial input/output data bit clock signal (2.8224 MHz) input terminal Not used (fixed at “L”)
41	ADDT	I	Recording data signal input from the A/D, D/A converter (IC301)
42	DADT	O	Playback data signal output to the A/D, D/A converter (IC301)
43	LRCK	O	L/R sampling clock signal (44.1 kHz) output to the A/D, D/A converter (IC301)
44	VSC2	—	Ground terminal (for internal logic)
45	XBCK	O	Serial input/output data bit clock signal (2.8224 MHz) out put to the A/D, D/A converter (IC301)

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

Pin No.	Pin Name	I/O	Description
46	FS256	O	Clock signal (11.2896 MHz) output to the A/D, D/A converter (IC301) (X' tal system)
47 to 52	A03, A04, A02, A05, A01, A06	O	Address signal output to the external D-RAM Not used (open)
53	VDIO1	—	Power supply terminal (+2.4V) (for I/O)
54	VSIO1	—	Ground terminal (for I/O)
55 to 59	A00, A07, A10. A08, A09	O	Address signal output to the external D-RAM Not used (open)
60	$\overline{XRAS}$	O	Row address strobe signal output to the external D-RAM "L" active Not used (open)
61	$\overline{IXOE}$	O	Output enable signal output terminal for internal D-RAM "L" active Not used (open)
62	$\overline{IXWE}$	O	Data write enable signal output terminal for internal D-RAM "L" active Not used (open)
63	$\overline{XCAS}$	O	Column address strobe signal output to the external D-RAM "L" active Not used (open)
64 to 67	D1, D2, D0, D3	I/O	Two-way data bus with the external D-RAM Not used (open)
68	VDC3	—	Power supply terminal (+1.8V) (for internal logic)
69	VSC3	—	Ground terminal (for internal logic)
70	A11	O	Address signal output to the external D-RAM Not used (open)
71	$\overline{XOE}$	O	Output enable signal output to the external D-RAM "L" active Not used (open)
72	$\overline{XWE}$	O	Data write enable signal output to the external D-RAM "L" active Not used (open)
73	MVCI	I (S)	Digital in PLL oscillation input from the external VCO Not used (fixed at "L")
74	ASYO	O (A)	Playback EFM full-swing output terminal
75	ASYI	I (A)	Playback EFM asymmetry comparator voltage input terminal
76	AVD1	—	Power supply terminal (+2.4V) (analog system)
77	BIAS	I (A)	Playback EFM asymmetry circuit constant current input terminal
78	RFI	I (A)	Playback EFM RF signal input from the SN761056ADBT (IC501)
79	AVS1	—	Ground terminal (analog system)
80	PCO	O (3)	Phase comparison output for master clock of the recording/playback EFM master PLL
81	FILI	I (A)	Filter input for master clock of the recording/playback EFM master PLL
82	FILO	O (A)	Filter output for master clock of the recording/playback EFM master PLL
83	CLTV	I (A)	Internal VCO control voltage input of the recording/playback EFM master PLL
84	PEAK	I (A)	Light amount signal (RF/ABCD) peak hold input from the SN761056ADBT (IC501)
85	BOTM	I (A)	Light amount signal (RF/ABCD) bottom hold input from the SN761056ADBT (IC501)
86	ABCD	I (A)	Light amount signal (ABCD) input from the SN761056ADBT (IC501)
87	FE	I (A)	Focus error signal input from the SN761056ADBT (IC501)
88	AUX1	I (A)	Auxiliary signal (I_3 signal/temperature signal) input terminal Not used (fixed at "H")
89	VC	I (A)	Middle point voltage (+1.2V) input terminal
90	ADIO	O (A)	Monitor output of the A/D converter input signal Not used (open)
91	ADRT	I (A)	A/D converter operational range upper limit voltage input terminal (fixed at "H" in this set)
92	AVD2	—	Power supply terminal (+2.4V) (analog system)
93	AVS2	—	Ground terminal (analog system)
94	ADRB	I (A)	A/D converter operational range lower limit voltage input terminal (fixed at "L" in this set)
95	SE	I (A)	Sled error signal input terminal Not used (fixed at "L")
96	TE	I (A)	Tracking error signal input from the SN761056ADBT (IC501)
97	DCHG	I (A)	Connected to the +2.4V power supply
98	APC	I (A)	Error signal input for the laser automatic power control Not used (fixed at "H")
99	ADFG	I (A)	ADIP duplex FM signal (22.05 kHz ± 1 kHz) input from the SN761056ADBT (IC501)
100	VDIO2	—	Power supply terminal (+2.4V) (for I/O)
101	VSIO2	—	Ground terminal (for I/O)
102	F0CNT	O	Filter f0 control signal output terminal Not used (open)

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

Pin No.	Pin Name	I/O	Description
103	XLRF	O	Serial latch signal output terminal Not used (open)
104	CKRF	O	Serial clock signal output terminal Not used (open)
105	DTRF	O	Writing data output terminal Not used (open)
106	APCREF	O	Control signal output to the reference voltage generator circuit for the laser automatic power control
107	LDDR	O	PWM signal output for the laser automatic power control Not used (open)
108	VDC4	—	Power supply terminal (+1.8V) (for internal logic)
109	TRDR	O	Tracking servo drive PWM signal (–) output to the MPC17A56FTA (IC601)
110	TFDR	O	Tracking servo drive PWM signal (+) output to the MPC17A56FTA (IC601)
111	FFDR	O	Focus servo drive PWM signal (+) output to the MPC17A56FTA (IC601)
112	FRDR	O	Focus servo drive PWM signal (–) output to the MPC17A56FTA (IC601)
113	FS4	O	Clock signal (176.4 kHz) output to the MPC18A20MTAEL (IC603) (X' tal system)
114	SRDR	O	Sled servo drive PWM signal (–) output terminal Not used (open)
115	SFDR	O	Sled servo drive PWM signal (+) output terminal Not used (open)
116	VSC4	—	Ground terminal (for internal logic)
117	SPRD	O	Spindle servo drive PWM signal (–) output terminal Not used (open)
118	SPFD	O	Spindle servo drive PWM signal (+) output terminal Not used (open)
119	FGIN	I	FG signal input terminal for spindle servo Not used (open)
120 to 122	TEST1 to TEST3	I	Input terminal for the test (normally : fixed at “L”)
123	EFMO	O	EFM signal output when recording mode to the MPC18A20MTAEL (IC603)
124	SPVS	O	Spindle servo drive voltage control signal output to the MPC17A56FTA (IC601)
125	VDIO3	—	Power supply terminal (+2.4V) (for I/O)
126	VSIO3	—	Ground terminal (for I/O)
127	SPDU	O	Spindle servo (U) drive signal output to the MPC17A56FTA (IC601)
128	SPDV	O	Spindle servo (V) drive signal output to the MPC17A56FTA (IC601)
129	SPDW	O	Spindle servo (W) drive signal output to the MPC17A56FTA (IC601)
130	SPCU	I	Spindle servo (U) timing signal input from the MPC17A56FTA (IC601)
131	SPCV	I	Spindle servo (V) timing signal input from the MPC17A56FTA (IC601)
132	SPCW	I	Spindle servo (W) timing signal input from the MPC17A56FTA (IC601)
133	SLDU	O	Sled servo (1+) drive signal output to the MPC17A56FTA (IC601)
134	SLDV	O	Sled servo (1–) drive signal output to the MPC17A56FTA (IC601)
135	SLDW	O	Sled servo (2+) drive signal output to the MPC17A56FTA (IC601)
136	VDC5	—	Power supply terminal (+1.8V) (for internal logic)
137	VSC5	—	Ground terminal (for internal logic)
138	SLCU	I	Sled servo (1) timing signal input from the MPC17A56FTA (IC601)
139	SLCV	I	Sled servo (2) timing signal input from the MPC17A56FTA (IC601)
140	SLCW	O	Sled servo (2–) timing signal output to the MPC17A56FTA (IC601)
141	SLVS	O	Sled servo voltage control signal output to the MPC17A56FTA (IC601)
142	BYPS	O	By-pass transistor control signal output to the MPC17A56FTA (IC601)
143	VSS	—	Ground terminal (for internal 16M bit D-RAM)
144	VDD	—	Power supply terminal (+2.4V) (for internal 16M bit D-RAM)
145	VSS	—	Ground terminal (for internal 16M bit D-RAM)
146	VDD	—	Power supply terminal (+2.4V) (for internal 16M bit D-RAM)
147	IVC	O	Output terminal for the test Not used (open)

• MAIN BOARD IC801 CXR701080-013GA (MASTER CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	SYNC REC	I	SYNCHRO REC switch (S801) input terminal "L": off, "H": on
2	OFTRK	I	Off track signal input from the CXD2660GA (IC502)
3	PROTECT	I	Rec-proof claw detect input from the protect detect switch (S806) "L": recording possible , "H": protect
4	PAUSE KEY	I	Set pause key input terminal
5	TX	O	Recording data output enable signal output to the CXD2660GA (IC502) Writing data transmission timing output
6	SENSE	I	Internal status (SENSE) input from the CXD2660GA (IC502)
7	WRPWR	O	Laser power select signal output to the CXD2660GA (IC502) "L": playback mode , "H": recording mode
8	XLAT	O	Serial data latch pulse output to the CXD2660GA (IC502)
9	XCS DSP	O	Chip select signal output to the CXD2660GA (IC502)
10	CS RTC	O	Chip select signal output to the real time clock (IC804)
11	SI0	I	Serial data input from the A/D, D/A converter (IC301), CXD2660GA (IC502), EEPROM (IC802), real time clock (IC804) and switch & liquid crystal display module unit
12	SO0	O	Serial data output to the A/D, D/A converter (IC301), CXD2660GA (IC502), EEPROM (IC802), real time clock (IC804) and switch & liquid crystal display module unit
13	SCK0	O	Serial clock signal output to the A/D, D/A converter (IC301), CXD2660GA (IC502), EEPROM (IC802), real time clock (IC804) and switch & liquid crystal display module unit
14	XGUM ON	I	Rechargeable battery pack detection switch (S901) input terminal "L": rechargeable battery pack in
15	VSS	—	Ground terminal
16	VDD	—	Power supply terminal (+2.4V)
17	XOUT	O	Not used (open)
18	BEEP	O	Beep sound control signal input terminal
19	RMC DTCK	I/O	TSB serial communication data input/output terminal for remote commander with headphone
20	XCS LCD	O	Chip select signal output to the liquid crystal display
21	LCD STB	O	Strobe signal output to the liquid crystal display
22	$\overline{\text{LCD RST}}$	O	Reset control signal output to the liquid crystal display
23	XHP STBY	O	Standby on/off control signal output to the line/headphone amplifier (IC303) "L": standby mode, "H": amplifier on
24	CLV U	O	Spindle servo (U) drive signal output to the MPC17A56FTAF (IC601)
25	CLV V	O	Spindle servo (V) drive signal output to the MPC17A56FTAF (IC601)
26	CLV W	O	Spindle servo (W) drive signal output to the MPC17A56FTAF (IC601)
27	MODE1	O	Power supply control signal output for over write head drive to the MPC18A20MTAEL (IC603)
28	MODE2	O	Power supply control signal output for over write head drive to the MPC18A20MTAEL (IC603)
29	MODE3	O	Power supply control signal output terminal for over write head drive
30	HD CON 1	O	Over write head control signal output to the MPC17A17DTB (IC602)
31	HD CON 2	O	Over write head control signal output to the MPC17A17DTB (IC602)
32	XREC MODE	O	Not used (open)
33	LD ON	O	Laser diode on/off control signal output terminal "L": laser off, "H": laser on Not used (open)
34	TSB SLV ON	I	TSB slave detect signal input terminal
35	SLD MON 1	I	Sled servo timing signal input from the MPC17A56FTA (IC601)
36	PD S0	O	PD IC mode switching signal output to the optical pick-up block
37	REG CTL CLK	O	Synchronizing external clock signal output terminal Not used (open)
38	PD S1	O	PD IC mode switching signal output to the optical pick-up block

Pin No.	Pin Name	I/O	Description
39	FFCLR	O	Input latch output for starting signal to the MPC18A31FTA (IC901)
40	SLEEP	O	System sleep control signal output to the MPC18A31FTA (IC901) "H": sleep on
41	TSB EDGE	I	TSB slave edge detect signal input terminal
42	GND SW	O	Ground line switching signal output terminal
43	$\overline{\text{XRST}}$	I	System reset signal input from the MPC18A31FTA (IC901) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
44	VSS	—	Ground terminal
45	XTAL	O	Main system clock output terminal (16.9344 MHz)
46	EXTAL	I	Main system clock input terminal (16.9344 MHz)
47	VDD	—	Power supply terminal (+2.4V)
48	TSB SLV CTL	I/O	Two-way control signal bus with TSB slave circuit
49	SPDL START SW	O	Spindle servo start switching signal output to the analog switch (IC504, 505)
50	OPEN CLOSE SW	I	Upper panel open/close detect switch (S801) input terminal (A/D input) "L": upper panel close, "H": upper panel open
51	XSHOCK	I	Recording shock detect signal input from the CXD2660GA (IC502)
52	FOK	I	Focus OK signal input from the CXD2660GA (IC502) "H": is input when focus is on ("L": NG)
53	SQSY	I	Subcode Q sync (SCOR) input from the CXD2660GA (IC502) "L" is input every 13.3 msec Almost all, "H" is input
54	DQSY	I	Digital In U-bit CD format subcode Q sync (SCOR) input from the CXD2660GA (IC502) "L" is input every 13.3 msec Almost all, "H" is input
55	XINT	I	Interrupt status input from the CXD2660GA (IC502)
56	T.MARK	I	T MARK switch (S803) input terminal
57	REC WBL SW	O	Stable control signal is output when recording
58	SERON	O	Series power supply control signal output to the MPC18A31FTA (IC901)
59	XCHG	O	Charge control signal output to the MPC18A31FTA (IC901)
60	XTEST	I	Setting terminal for the test mode "L": test mode, normally: fixed at "H"
61	SET CODE0	I	Destination setting terminal Fixed at "L" in this set
62	SET CODE1	I	Destination setting terminal Fixed at "L" in this set (US, canadian model: Not used (open))
63	SET CODE2	I	Destination setting terminal Fixed at "L" in this set (US, canadian model: Not used (open))
64	REG CTL PWM	O	Synchronizing external clock signal output to the MPC18A31FTA (IC901)
65	VRM PWM	O	VREM power supply voltage control PWM signal output to the MPC18A31FTA (IC901)
66	VC PWM	O	System power supply voltage control PWM signal output to the MPC18A31FTA (IC901)
67	SPDL PWM	O	Spindle servo drive voltage control PWM signal output to the MPC17A56FTA (IC601)
68	$\overline{\text{XIC RST}}$	O	Reset signal output to the A/D, D/A converter (IC301), SN761056ADBT (IC501) and CXD2660GA (IC502) "L": reset
69	REC LED	O	REC LED drive signal output terminal "H": LED on
70	SI1	I	Joint text data input from the remote commander with headphone
71	SO1	O	Joint text data output to the remote commander with headphone
72	SCK1	O	Joint data communication clock output to the remote commander with headphone
73	XHOLD SW	I	HOLD switch (S804) input terminal "L": hold on, "H": hold off
74	VDD	—	Power supply terminal (+2.4V)
75	TEX	I	Sub system clock input terminal Not used (open)
76	TX	O	Sub system clock output terminal Not used (open)
77	VSS	—	Ground terminal
78	VBKAN	I	Sub power supply input terminal
79	S MON	I	Servo signal monitor input from the SN761056ADBT (IC501) (A/D input)

Pin No.	Pin Name	I/O	Description
80	VB MON	I	Un-regulator power supply voltage monitor input terminal (A/D input)
81	CHG MON	I	Rechargeable battery voltage monitor input from the MPC18A31FTA (IC901) (A/D input)
82	VREF MON	I	Reference voltage monitor input from the SN761056ADBT (IC501) (A/D input)
83	WK DET	I	Set key starting detect signal input terminal (A/D input)
84	HALF LOCK SW	I	Open knob detect switch (S802) input terminal "L": normal position, "H": open knob slid
85	RMC KEY	I	Remote commander with headphone key input terminal (A/D input)
86	SET KEY 1	I	Set key input terminal (A/D input) (■, ▶▶I, I◀◀ ,VOL +/– keys input)
87	SET KEY 2	I	Set key input terminal (A/D input) (▶, jog, END SEARCH keys input)
88	REC KEY	I	REC key input terminal
89	VRM MON	I	VREM voltage monitor input terminal (A/D input)
90	HIDC MON	I	HI-DC voltage monitor input terminal (A/D input)
91	AD GND	—	Ground terminal (for A/D converter)
92	AVREF	I	Input terminal for power supply voltage adjustment reference voltage (+2.4V) (for A/D converter)
93	AVDD	—	Power supply terminal (+2.4V) (for A/D converter)
94	TEST0	I	Input terminal for the test (normally: fixed at "L")
95	TEST1	I	Input terminal for the test (normally: fixed at "L")
96	TDI	I	Input terminal for JTAG Not used (open)
97	TMS	I	Input terminal for JTAG Not used (open)
98	TCK	I	Input terminal for JTAG Not used (open)
99	TRST	I	Input terminal for JTAG Not used (open)
100	TDO	O	Output terminal for JTAG Not used (open)
101	TSB CLKCTL	O	TSB clock control signal output terminal
102	SSB DATA	I/O	Two-way SSB serial data bus with the SN761056ADBT (IC501)
103	SSB CLK	O	SSB serial clock signal output to the SN761056ADBT (IC501)
104	FLASH WR EN	—	Not used (fixed at "H")
105	VDD	—	Power supply terminal (+2.4V)
106	VSS	—	Ground terminal
107 to 109	VLC1 to VLC3	—	Power supply terminal for the liquid crystal display (+2.4V)
110	XCS ADA	O	Chip select signal output to the A/D, D/A converter (IC301)
111	XPD ADA	O	Power supply control signal output to the A/D, D/A converter (IC301)
112	$\overline{\text{XRST MTR DRV}}$	O	Reset signal output terminal "L": reset Not used (open)
113	OPT DET	I	DIN plug detect signal input terminal
114	XJACK DET	I	LINE IN plug detect signal input terminal
115	XMIC DET	I	MIC plug detect signal input terminal
116	XOPT CONT	O	Power supply control signal output to the DIN plug laser diode
117	MUTE	O	Analog muting on/off control signal output terminal "L": muting off, "H": muting on
118	XHP STBY TMP	O	Power supply control signal output to the headphone amplifier Not used (open)
119	XCS NV	O	Chip select signal output to the EEPROM (IC802)
120	XINT REC SW	O	Not used (open)

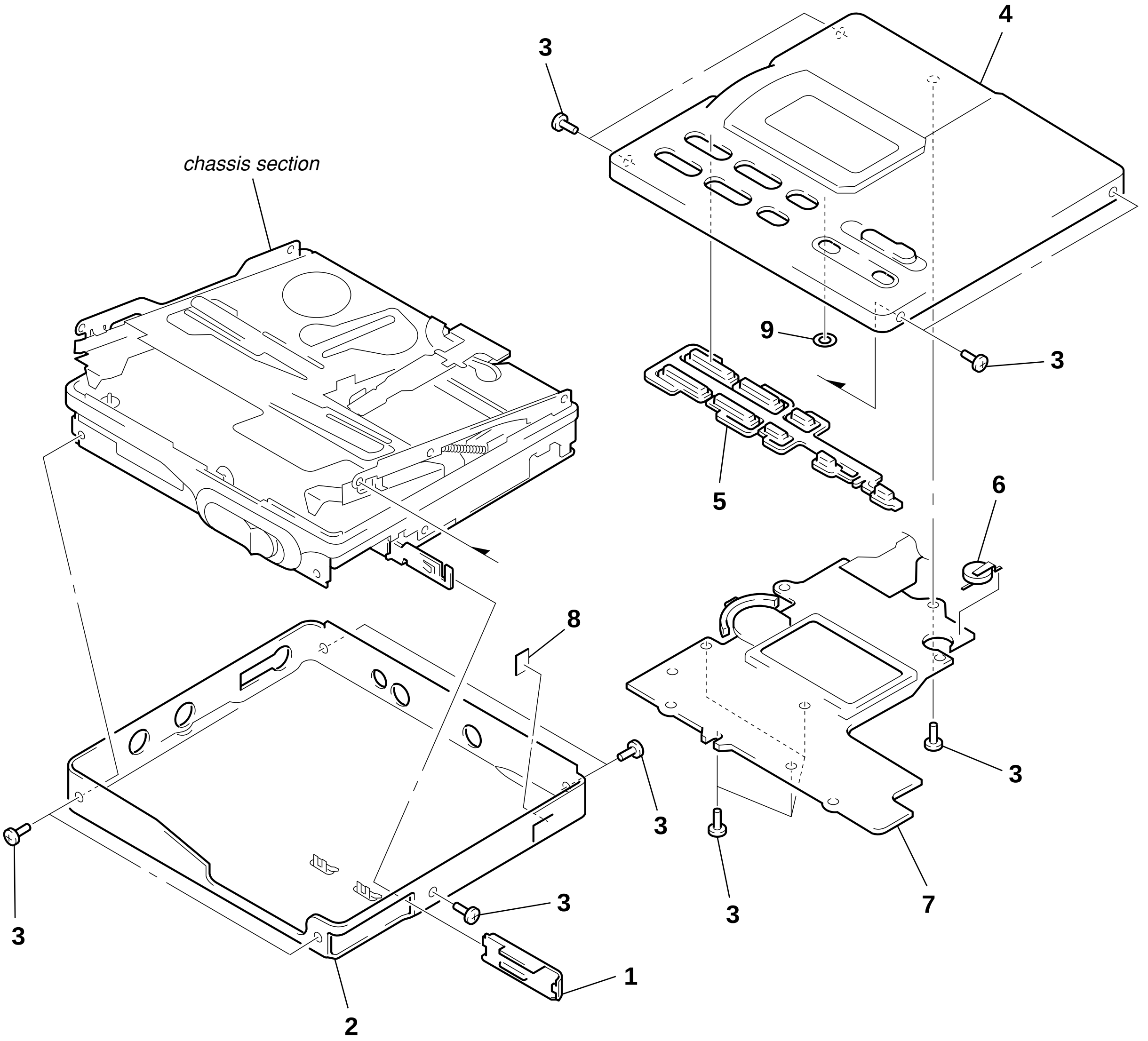
SECTION 7
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  AUS : Australian model
  CH : Chinese model
  CND : Canadian model
  FR : French model
  HK : Hong Kong model
  JEW : Tourist model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

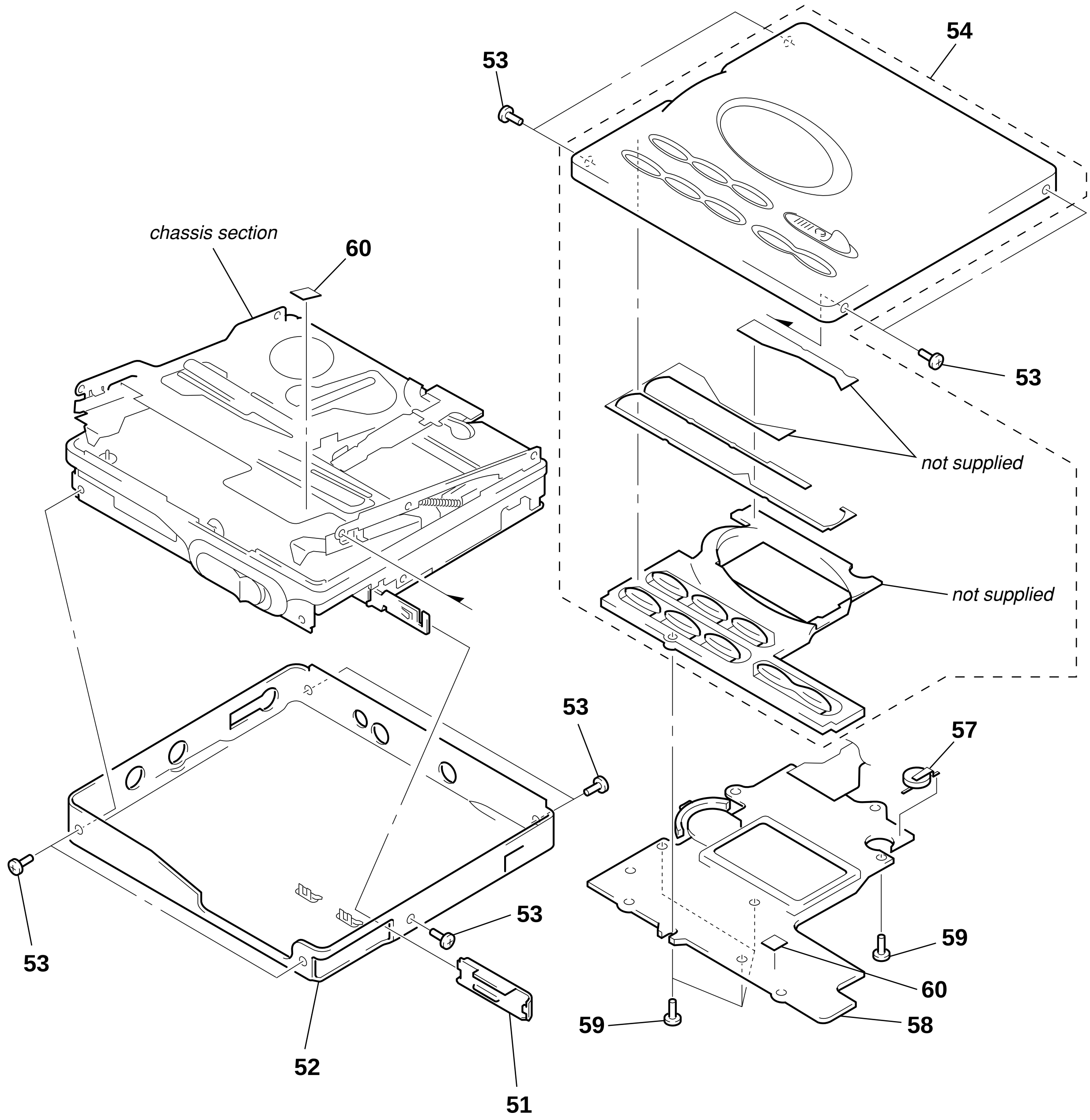
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

(1) PANEL SECTION (MZ-R90)



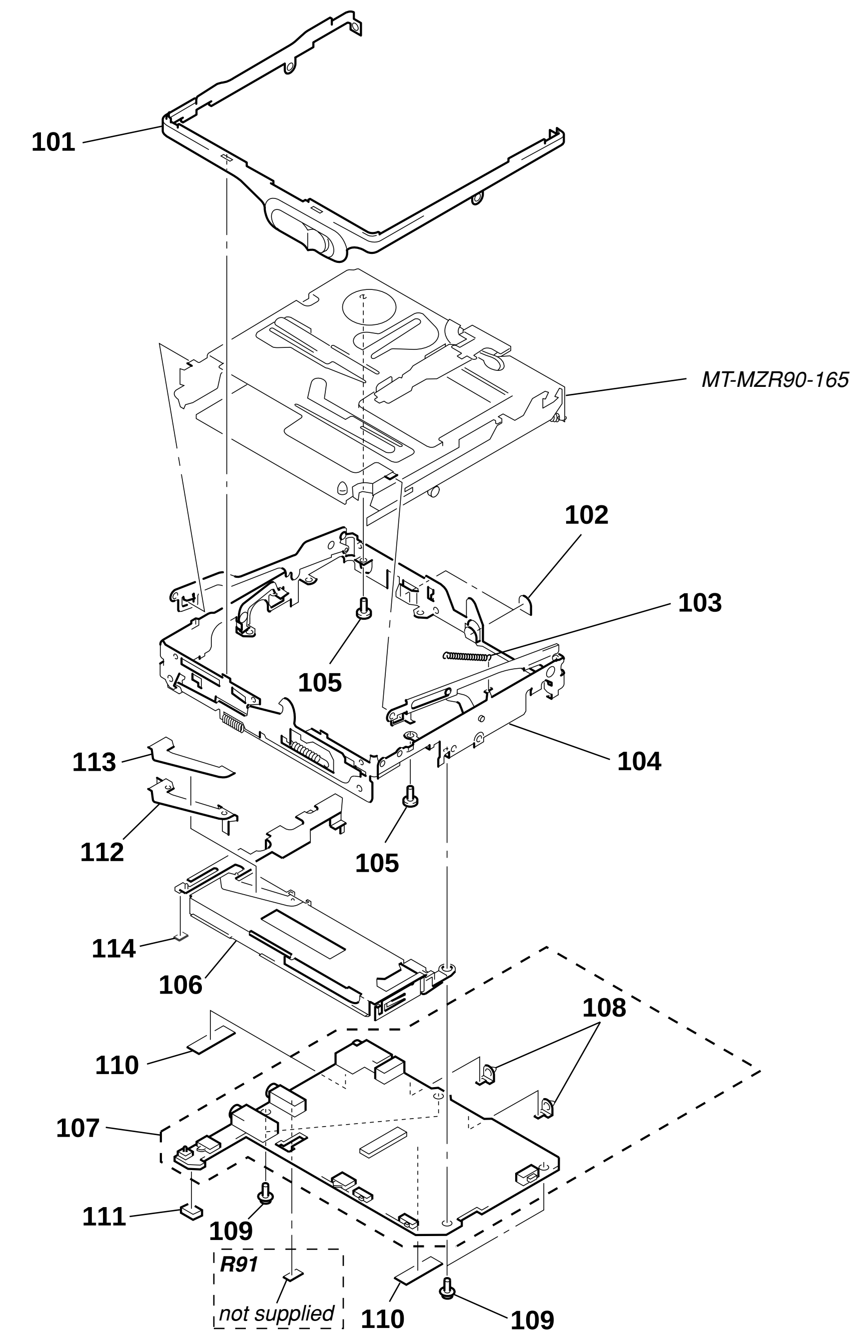
Ref. No.	Part No.	Description	Remark
1	4-223-077-01	LID, BATTERY CASE (SILVER)	
1	4-223-077-11	LID, BATTERY CASE (BLACK) (HK, CH, JEW)	
1	4-223-077-51	LID, BATTERY CASE (BLUE) (US)	
2	X-3378-689-1	PANEL (R90L) ASSY, BOTTOM (BLUE) (US)	
2	X-4952-045-1	PANEL (S) ASSY, BOTTOM (SILVER)	
2	X-4952-048-1	PANEL (B) ASSY, BOTTOM (BLACK) (HK, CH, JEW)	
3	4-218-229-09	SCREW (1.4), MI (SILVER)	
3	4-218-229-11	SCREW (1.4), MI (BLACK) (HK, CH, JEW)	
3	4-218-229-13	SCREW (1.4), MI (BLACK) (CND)	
4	X-3378-556-1	SERVICE ASSY, UPPER PANEL (S) (SILVER)	
4	X-3378-557-1	SERVICE ASSY, UPPER PANEL (B) (BLACK)	
4	X-3378-989-1	SERVICE ASSY, UPPER PANEL (L) (BLUE)	
5	4-223-103-01	BUTTON, CONTROL (SILVER)	
5	4-223-103-11	BUTTON, CONTROL (BLACK) (HK, CH, JEW)	
6	1-756-028-11	BATTERY	
7	1-803-759-11	LCD MODULE	
8	3-044-057-01	SHEET (BATTERY CASE)	
9	3-048-299-01	WASHER (LCD)	

(2) PANEL SECTION (MZ-R91)



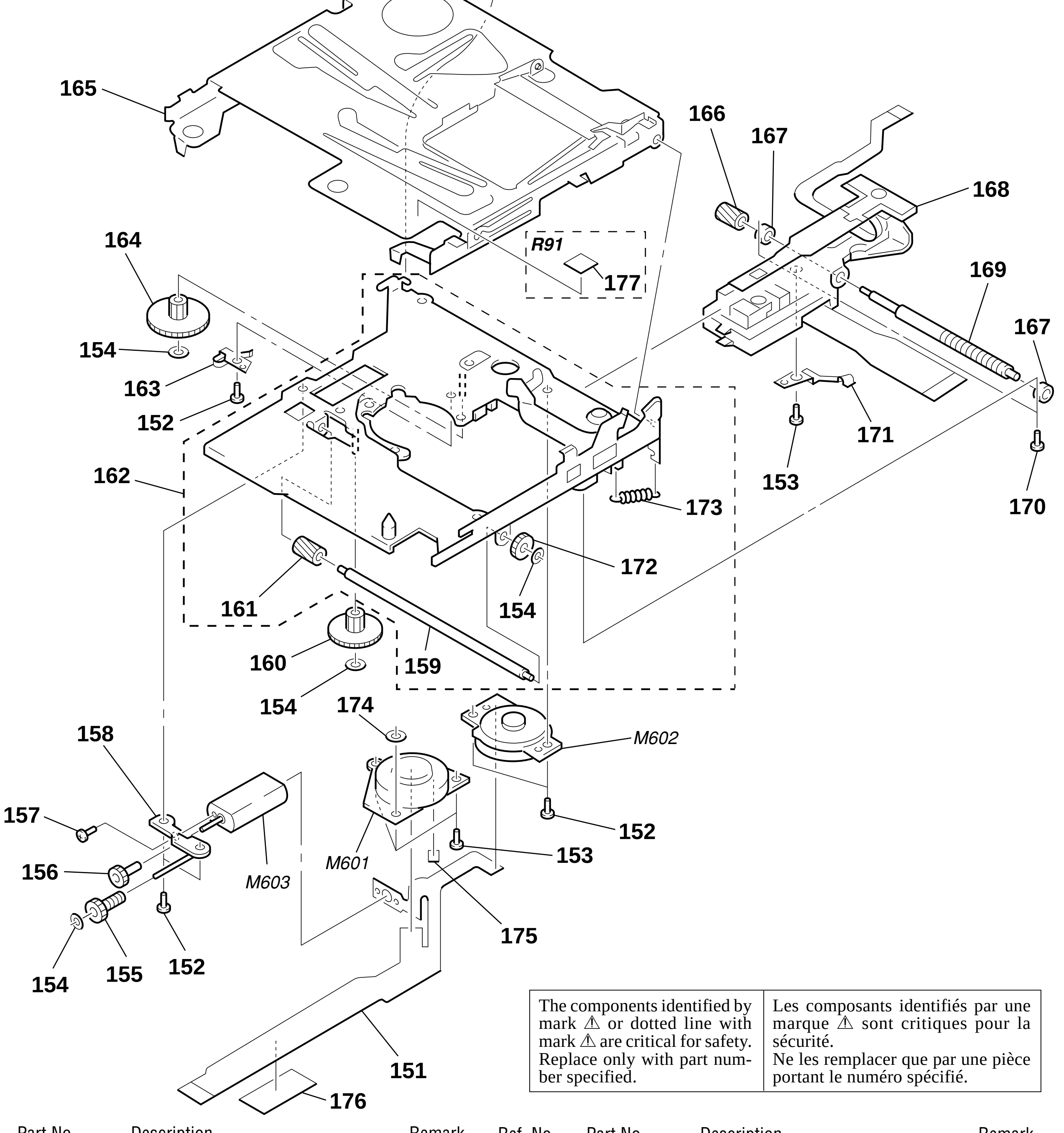
Ref. No.	Part No.	Description	Remark
51	4-223-077-21	LID, BATTERY CASE (BLUE)	
51	4-223-077-31	LID, BATTERY CASE (RED)	
51	4-223-077-41	LID, BATTERY CASE (WHITE)	
52	X-4952-184-1	PANEL (L) ASSY, BOTTOM (BLUE)	
52	X-4952-186-1	PANEL (R) ASSY, BOTTOM (RED)	
52	X-4952-188-1	PANEL (W) ASSY, BOTTOM (WHITE)	
53	4-218-229-09	SCREW (1.4), MI	
54	X-3378-553-1	SERVICE ASSY, UPPER PANEL (L) (BLUE)	
54	X-3378-554-1	SERVICE ASSY, UPPER PANEL (R) (RED)	
54	X-3378-555-1	SERVICE ASSY, UPPER PANEL (W) (WHITE)	
57	1-756-028-11	BATTERY	
58	1-803-759-11	LCD MODULE	
59	4-984-017-01	SCREW (1.7), TAPPING	
60	3-044-057-01	SHEET (BATTERY CASE)	

(3) CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
101	X-4952-044-1	BELT ASSY (S), ORNAMENTAL (SILVER)	(R90/R91)
101	X-4952-337-1	BELT (B) ASSY, ORNAMENTAL (BLACK)	(R90: BLACK)
102	4-223-076-01	SHEET (TERMINAL), INSULATING	
103	4-223-083-01	SPRING (ARM), TENSION	
104	X-4952-042-1	CHASSIS ASSY, SET	
105	4-218-233-05	SCREW (1.4), MI	
106	X-4952-043-1	CASE ASSY, BATTERY	
107	A-3323-361-A	MAIN BOARD, COMPLETE	(R90: AEP, UK, E, AUS, CH/R91: AEP, UK)
107	A-3323-374-A	MAIN BOARD, COMPLETE (R90: FR/R91: FR)	
107	A-3323-491-A	MAIN BOARD, COMPLETE	(R90: HK, JEW/R91: HK, JEW)
107	A-3323-493-A	MAIN BOARD, COMPLETE (R90: US, CND)	
108	4-223-110-01	TERMINAL (3)	
109	3-335-797-91	SCREW (M1.4), TOOTHED LOCK	
110	3-042-741-01	SHEET (FLEXIBLE) (R90/R91: HK, JEW)	
111	3-044-312-01	SHEET (PC BOARD) (2)	
112	3-043-283-01	JOINT (R90: US, E, AUS, CH/	R91: EXCEPT HK, JEW)
112	3-043-283-02	JOINT (R90: EXCEPT US, E, AUS CH/	R91: HK, JEW)
113	3-043-530-01	SHEET (JOINT), INSULATING	(R90: EXCEPT CA/R91)
114	3-049-215-01	SHEET (PRO)	

(4) MD-MECHANISM DECK SECTION (MT-MZR90-165)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	1-675-466-11	MOTOR FLEXIBLE BOARD	
152	4-963-883-42	SCREW (M1.4), PRECISION PAN	
153	4-963-883-31	SCREW (M1.4), PRECISION PAN	
154	3-338-645-31	WASHER (0.8-2.5)	
155	4-222-214-11	GEAR (HB)	
156	4-222-217-01	GEAR (HA)	
157	4-224-885-01	SCREW (M1.2X1.5)	
158	X-4951-918-1	CHASSIS ASSY, GEAR	
159	4-222-223-01	SHAFT, SUB	
160	4-222-215-01	GEAR (HC)	
161	4-222-218-01	GEAR (HD)	
162	X-4951-920-1	CHASSIS ASSY	
163	4-222-206-01	SPRING, THRUST	
164	4-222-216-01	GEAR (SA)	
165	X-4951-919-1	HOLDER ASSY	

Ref. No.	Part No.	Description	Remark
166	4-222-208-01	GEAR (SB)	
167	4-222-204-01	BEARING	
⚠168	X-4952-386-1	SERVICE ASSY, OP	
169	4-222-203-01	SCREW, LEAD	
170	3-349-825-21	SCREW	
171	4-222-205-01	SPRING, RACK	
172	4-222-222-01	GEAR (RACK)	
173	4-222-226-01	SPRING (EJECT), TENSION	
174	4-997-677-11	WASHER	
175	3-043-428-01	SHEET (CLV)	
176	3-222-363-01	SPACER (FLEXIBLE)	
M601	8-835-666-01	MOTOR, DC SSM-01C14A (SPINDLE) (WITH TURN TABLE)	
M602	1-763-399-11	MOTOR, DC (SLED) (WITH GEAR)	
M603	1-763-400-11	MOTOR, DC (OVER WRITE HEAD UP/DOWN)	

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Abbreviation
  AUS : Australian model
  CH : Chinese model
  CND : Canadian model
  FR : French model
  HK : Hong Kong model
  JEW : Tourist model
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-3323-361-A	MAIN BOARD, COMPLETE			
		(R90: AEP, UK, E, AUS, CH/R91: AEP, UK)			
	A-3323-374-A	MAIN BOARD, COMPLETE (R90: FR/R91: FR)			
	A-3323-491-A	MAIN BOARD, COMPLETE			
		(R90: HK, JEW/R91: HK, JEW)			
	A-3323-493-A	MAIN BOARD, COMPLETE (R90: US, CND)			
		*********************			
	4-223-110-01	TERMINAL (3)			
		< CAPACITOR >			
C101	1-125-984-21	TANTALUM CHIP	22uF	20%	4V
C102	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C103	1-131-734-21	TANTALUM CHIP	4.7uF	20%	6.3V
C104	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C105	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C106	1-131-727-91	TANTALUM CHIP	470uF	20%	2.5V
C107	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
					(EXCEPT R90: FR/R91: FR)
C107	1-165-176-11	CERAMIC CHIP	0.047uF		16V
					(R90: FR/R91: FR)
C108	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C109	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C110	1-135-337-11	TANTALUM CHIP	1uF	20%	6.3V
C111	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C112	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C113	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C114	1-164-878-11	CERAMIC CHIP	150PF	5%	16V
C116	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C117	1-125-985-91	CERAMIC CHIP	0.47uF	10%	25V
C118	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	16V
C120	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C122	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C201	1-125-984-21	TANTALUM CHIP	22uF	20%	4V
C202	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C203	1-131-734-21	TANTALUM CHIP	4.7uF	20%	6.3V
C204	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C205	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C206	1-131-727-91	TANTALUM CHIP	470uF	20%	2.5V
C207	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
					(EXCEPT R90: FR/R91: FR)
C207	1-165-176-11	CERAMIC CHIP	0.047uF		16V
					(R90: FR/R91: FR)
C208	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C209	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C210	1-135-337-11	TANTALUM CHIP	1uF	20%	6.3V
C211	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C212	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C213	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C214	1-164-878-11	CERAMIC CHIP	150PF	5%	16V
C216	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C217	1-125-985-91	CERAMIC CHIP	0.47uF	10%	25V
C218	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	16V
C220	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C222	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C301	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C302	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C303	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C304	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C305	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C306	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C307	1-131-862-91	TANTALUM CHIP	47uF	20%	4V
C308	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C309	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C310	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C311	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C312	1-164-949-11	CERAMIC CHIP	0.047uF		16V
C313	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C314	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C315	1-131-725-91	TANTALUM CHIP	47uF	20%	4V
C316	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C317	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C318	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C319	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C320	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C321	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C322	1-131-862-91	TANTALUM CHIP	47uF	20%	4V
C323	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C324	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C327	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C328	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
					(R90: US, CND)
C329	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
					(R90: US, CND)
C330	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C331	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C332	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C501	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

MAIN

Ref. No.	Part No.	Description			Remark
C502	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C503	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C504	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C506	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C508	1-164-858-11	CERAMIC CHIP	22PF	5%	16V
C509	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C510	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C511	1-164-845-11	CERAMIC CHIP	5PF	0.25PF	16V
C512	1-164-938-11	CERAMIC CHIP	0.0015uF	10%	16V
C513	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C514	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C515	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C516	1-164-845-11	CERAMIC CHIP	5PF	0.25PF	16V
C517	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C519	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C520	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C521	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C522	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C524	1-131-725-91	TANTALUM CHIP	47uF	20%	4V
C525	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C526	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C527	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C528	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C529	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C530	1-131-725-91	TANTALUM CHIP	47uF	20%	4V
C531	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C532	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C533	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C534	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C535	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C536	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C537	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C600	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C601	1-131-623-91	TANTALUM CHIP	15uF	20%	4V
C602	1-109-813-11	CAP, CHIP	100PF	5%	100V
C603	1-135-337-11	TANTALUM CHIP	1uF	20%	6.3V
C604	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C605	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C606	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C607	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C608	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C609	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C610	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C611	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C612	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C613	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C614	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C615	1-135-379-91	TANTALUM CHIP	3.3uF	20%	10V
C617	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C618	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C619	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C620	1-131-621-91	TANTALUM CHIP	6.8uF	20%	6.3V
C621	1-127-578-91	TANTALUM CHIP	3.3uF	20%	6.3V
C622	1-131-621-91	TANTALUM CHIP	6.8uF	20%	6.3V
C623	1-127-578-91	TANTALUM CHIP	3.3uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C624	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C625	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C626	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C627	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C628	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C629	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C630	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C631	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C632	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C633	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C634	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C635	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C636	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C637	1-131-726-91	TANTALUM CHIP	33uF	20%	6.3V
C638	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C801	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C803	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C804	1-164-858-11	CERAMIC CHIP	22PF	5%	16V
C806	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C807	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C808	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C809	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C810	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C811	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C899	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
				(EXCEPT R90: US, CND)	
C901	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C902	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C903	1-128-964-91	TANTALUM CHIP	100uF	20%	6.3V
C904	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C905	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C906	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C907	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C908	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C910	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C911	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C913	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C914	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C915	1-125-840-91	TANTALUM	10uF	20%	6.3V
C916	1-131-725-91	TANTALUM CHIP	47uF	20%	4V
C917	1-128-964-91	TANTALUM CHIP	100uF	20%	6.3V
C918	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C919	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C920	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C921	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C922	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C923	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C925	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C926	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C927	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C928	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C929	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C930	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C931	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C932	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1001	1-125-840-91	TANTALUM	10uF	20%	6.3V
C1002	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C1003	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V

Ref. No.	Part No.	Description	Remark
C1004	1-164-939-11	CERAMIC CHIP 0.0022uF 10%	16V
		< CONNECTOR >	
* CN501	1-778-168-11	CONNECTOR, FFC/FPC (ZIF) 20P	
* CN601	1-793-510-21	CONNECTOR, FPC (ZIF) 5P	
* CN602	1-793-511-21	CONNECTOR, FPC (ZIF) 15P	
* CN801	1-793-511-21	CONNECTOR, FPC (ZIF) 15P	
		< DIODE >	
D301	8-719-077-43	DIODE MAZZ068H01S0	
D302	8-719-077-43	DIODE MAZZ068H01S0	
D303	8-719-056-54	DIODE MAZS068008SO	
D304	8-719-017-58	DIODE MA8068-TX	
D501	8-719-421-27	DIODE MA728-TX	
D600	8-719-072-10	DIODE FS05J10-TP	
D601	8-719-072-10	DIODE FS05J10-TP	
D602	8-719-421-27	DIODE MA728-TX	
D603	8-719-067-36	DIODE MA3ZD1200LS0	
D801	8-719-421-27	DIODE MA728-TX	
D802	8-719-988-61	DIODE 1SS355TE-17	
D803	8-719-420-51	DIODE MA729-TX	
D804	8-719-069-29	DIODE RB520S-30TE61	
D901	8-719-420-51	DIODE MA729-TX	
D902	8-719-072-26	DIODE FS1J3-TP	
D903	8-719-072-26	DIODE FS1J3-TP	
D905	8-719-074-74	DIODE MA3XD15001S0	
D906	8-719-074-74	DIODE MA3XD15001S0	
D907	8-719-072-26	DIODE FS1J3-TP	
		< FERRITE BEAD/RESISTOR >	
FB301	1-500-329-21	FERRITE BEAD INDUCTOR	
FB302	1-500-329-21	FERRITE BEAD INDUCTOR	
FB303	1-216-864-11	METAL CHIP 0 5%	1/16W (EXCEPT R90: US, CND)
FB303	1-414-228-11	FERRITE BEAD INDUCTOR (R90: US, CND)	
FB304	1-216-864-11	METAL CHIP 0 5%	1/16W
FB305	1-500-329-21	FERRITE BEAD INDUCTOR	
FB306	1-500-329-21	FERRITE BEAD INDUCTOR	
FB501	1-216-864-11	METAL CHIP 0 5%	1/16W
FB502	1-216-864-11	METAL CHIP 0 5%	1/16W
FB503	1-216-864-11	METAL CHIP 0 5%	1/16W (EXCEPT R90: US, CND)
FB503	1-414-760-21	FERRITE, EMI (SMD) (R90: US, CND)	
FB504	1-216-864-11	METAL CHIP 0 5%	1/16W (EXCEPT R90: US, CND)
FB504	1-414-229-11	FERRITE BEAD INDUCTOR (R90: US, CND)	
FB505	1-216-864-11	METAL CHIP 0 5%	1/16W (EXCEPT R90: US, CND)
FB505	1-500-329-21	FERRITE BEAD INDUCTOR (R90: US, CND)	
FB601	1-500-329-21	FERRITE BEAD INDUCTOR	
		< IC >	
IC301	8-759-641-92	IC AK4517BVQ-L	
IC302	8-759-572-38	IC NJM2140R	
IC303	8-759-641-90	IC OPA2340EA	
IC304	8-759-559-91	IC RN5RZ25AA-TR	
IC305	8-759-559-91	IC RN5RZ25AA-TR	
IC501	8-759-682-68	IC SN761056CDBT	

Ref. No.	Part No.	Description	Remark
@ IC502	8-752-397-66	IC CXD2660GA	
IC504	8-759-647-75	IC TC7W66FK (TE85R)	
IC505	8-759-647-75	IC TC7W66FK (TE85R)	
IC601	8-759-678-83	IC MPC17A56FTAEB	
IC602	8-759-642-58	IC MPC17A17XDTBR2	
IC603	8-759-642-59	IC MPC18A20MTAEL	
IC604	8-759-358-40	IC TLC372CPWR	
IC605	8-759-586-58	IC XC6367B103MR	
@ IC801	8-752-914-73	IC CXR701080-013GA	
IC802	8-759-593-47	IC AK6417AM-E2	
IC803	8-759-641-93	IC XC6383C301MR	
IC804	8-759-641-91	IC RV5C348A-E2	
IC901	8-759-678-82	IC MPC18A31FTAEB	
IC902	8-759-652-23	IC RN5RG25AA-TR	
		< JACK >	
J301	1-793-619-21	JACK (LINE IN (OPTICAL))	
J303	1-793-620-21	JACK (MIC (PLIG IN POWER)	
J304	1-793-509-11	JACK (🎧/LINE OUT)	
J901	1-785-383-11	JACK, DC (POLARITY UNIFIED TYPE)	(DC IN 3V)
		< COIL >	
L301	1-469-535-21	INDUCTOR 10uH	
L302	1-469-535-21	INDUCTOR 10uH	
L303	1-469-535-21	INDUCTOR 10uH	
L501	1-469-535-21	INDUCTOR 10uH	
L502	1-469-535-21	INDUCTOR 10uH	
L601	1-410-389-31	INDUCTOR CHIP 47uH	
L602	1-469-422-21	INDUCTOR 22uH	
L603	1-419-258-21	COIL, CHOKE 68uH	
L604	1-410-389-31	INDUCTOR CHIP 47uH	
L605	1-469-422-21	INDUCTOR 22uH	
L606	1-414-407-41	INDUCTOR 330uH	
L607	1-419-441-21	INDUCTOR 4.7uH	
L801	1-469-535-21	INDUCTOR 10uH	
L802	1-410-389-31	INDUCTOR CHIP 47uH	
L901	1-414-400-41	INDUCTOR 22uH	
L902	1-469-426-21	INDUCTOR 100uH	
L903	1-469-367-21	INDUCTOR 10uH	
L904	1-419-257-21	COIL, CHOKE 22uH	
L905	1-419-407-21	COIL, CHOKE 33uH	
		< LINE FILTER >	
LF901	1-416-405-21	FILTER, CHIP EMI (COMMON MODE)	
		< TRANSISTOR >	
Q101	8-729-044-58	FET SI2304DS-T1	
Q102	8-729-050-32	TRANSISTOR 2SC5585TL	
Q201	8-729-044-58	FET SI2304DS-T1	
Q202	8-729-050-32	TRANSISTOR 2SC5585TL	
Q301	8-729-928-81	TRANSISTOR DTC144EE-TL	
Q302	8-729-046-49	FET FDV304P	
Q303	8-729-929-99	TRANSISTOR UMB11-TN	
Q305	8-729-046-45	FET SI2302DS-T1	
Q306	8-729-047-48	TRANSISTOR UMD12N-TR	
Q307	8-729-047-48	TRANSISTOR UMD12N-TR	
Q308	8-729-047-48	TRANSISTOR UMD12N-TR	

@ Replacement of CXD2660GA (IC502) and CXR701080-013GA (IC801) used in this set require a special tool. Therefore, they cannot be replaced.

MAIN

Ref. No.	Part No.	Description			Remark
Q309	8-729-928-81	TRANSISTOR DTC144EE-TL			
Q501	8-729-928-81	TRANSISTOR DTC144EE-TL			
Q601	8-729-046-43	FET HAT2051T-EL			
Q602	8-729-046-42	FET HAT2050T-EL			
Q603	8-729-046-45	FET SI2302DS-T1			
Q604	8-729-047-48	TRANSISTOR UMD12N-TR			
Q605	8-729-928-27	TRANSISTOR DTA144EE-TL			
Q607	8-729-046-45	FET SI2302DS-T1			
Q801	8-729-029-14	TRANSISTOR DTC144EUA-T106			
Q802	8-729-029-14	TRANSISTOR DTC144EUA-T106			
Q803	8-729-905-35	TRANSISTOR 2SC4081T106R			
Q804	8-729-905-35	TRANSISTOR 2SC4081T106R			
Q805	8-729-905-35	TRANSISTOR 2SC4081T106R			
Q806	8-729-905-35	TRANSISTOR 2SC4081T106R			
Q807	8-729-029-14	TRANSISTOR DTC144EUA-T106			
Q809	8-729-230-60	TRANSISTOR 2SA1586YG-TE85L			
Q901	8-729-046-44	TRANSISTOR ZDT6718TA			
Q902	8-729-046-45	FET SI2302DS-T1			
Q904	8-729-043-46	FET MMBF2201NT1			
Q905	8-729-928-27	TRANSISTOR DTA144EE-TL			
Q906	8-729-928-81	TRANSISTOR DTC144EE-TL			
Q1001	8-729-922-10	TRANSISTOR 2SA1577-T106-QR			
		< RESISTOR >			
R102	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R103	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R104	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R105	1-208-687-11	METAL CHIP	1.5K	0.5%	1/16W
R107	1-218-961-11	RES, CHIP	4.7K	5%	1/16W
R108	1-218-953-11	RES, CHIP	1K	5%	1/16W
R109	1-216-793-11	RES, CHIP	4.7	5%	1/16W
					(EXCEPT R90: FR/R91: FR)
R109	1-216-801-11	RES, CHIP	22	5%	1/16W
					(R90: FR/R91: FR)
R111	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R112	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R113	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R114	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R115	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R116	1-218-945-11	METAL CHIP	220	0.5%	1/16W
R117	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R118	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R119	1-218-985-11	METAL CHIP	470K	0.5%	1/16W
R120	1-218-849-11	METAL CHIP	3.3K	0.5%	1/16W
R122	1-218-953-11	RES, CHIP	1K	5%	1/16W
R202	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R203	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R204	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R205	1-208-687-11	METAL CHIP	1.5K	0.5%	1/16W
R207	1-218-961-11	RES, CHIP	4.7K	5%	1/16W
R208	1-218-953-11	RES, CHIP	1K	5%	1/16W
R209	1-216-793-11	RES, CHIP	4.7	5%	1/16W
					(EXCEPT R90: FR/R91: FR)
R209	1-216-801-11	RES, CHIP	22	5%	1/16W
					(R90: FR/R91: FR)
R211	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R212	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R213	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R214	1-208-927-11	METAL CHIP	47K	0.5%	1/16W

Ref. No.	Part No.	Description			Remark
R215	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R216	1-218-945-11	METAL CHIP	220	0.5%	1/16W
R217	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R218	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R219	1-218-985-11	METAL CHIP	470K	0.5%	1/16W
R220	1-218-849-11	METAL CHIP	3.3K	0.5%	1/16W
R222	1-218-953-11	RES, CHIP	1K	5%	1/16W
R301	1-218-985-11	RES, CHIP	470K	5%	1/16W
R302	1-218-953-11	RES, CHIP	1K	5%	1/16W
R303	1-216-864-11	METAL CHIP	0	5%	1/16W
R304	1-216-864-11	METAL CHIP	0	5%	1/16W
R305	1-218-941-11	RES, CHIP	100	5%	1/16W
R307	1-218-941-11	RES, CHIP	100	5%	1/16W
R309	1-218-941-11	RES, CHIP	100	5%	1/16W
R317	1-218-941-11	RES, CHIP	100	5%	1/16W
R318	1-218-941-11	RES, CHIP	100	5%	1/16W
R319	1-218-941-11	RES, CHIP	100	5%	1/16W
R320	1-216-864-11	METAL CHIP	0	5%	1/16W
R322	1-218-989-11	RES, CHIP	1M	5%	1/16W
R323	1-218-973-11	RES, CHIP	47K	5%	1/16W
R324	1-218-971-11	RES, CHIP	33K	5%	1/16W
R502	1-216-833-11	RES, CHIP	10K	5%	1/16W
R503	1-216-864-11	METAL CHIP	0	5%	1/16W
R505	1-216-864-11	METAL CHIP	0	5%	1/16W
R506	1-216-864-11	METAL CHIP	0	5%	1/16W
R507	1-218-971-11	RES, CHIP	33K	5%	1/16W
R508	1-216-809-11	RES, CHIP	100	5%	1/16W
					(EXCEPT R90: US,CND, HK, JEW/ R91: HK, JEW)
R508	1-216-864-11	METAL CHIP	0	5%	1/16W
					(R90: HK, JEW/R91: HK, JEW)
R508	1-218-823-11	METAL CHIP	100	0.5%	1/16W
					(R90: US, CND)
R509	1-216-809-11	RES, CHIP	100	5%	1/16W
					(EXCEPT R90: US,CND, HK, JEW/ R91: HK, JEW)
R509	1-216-864-11	METAL CHIP	0	5%	1/16W
					(R90: HK, JEW/R91: HK, JEW)
R509	1-218-839-11	METAL CHIP	470	0.5%	1/16W
					(R90: US, CND)
R510	1-216-809-11	RES, CHIP	100	5%	1/16W
					(EXCEPT R90: US,CND, HK, JEW/ R91: HK, JEW)
R510	1-216-864-11	METAL CHIP	0	5%	1/16W
					(R90: HK, JEW/R91: HK, JEW)
R510	1-218-831-11	METAL CHIP	220	0.5%	1/16W
					(R90: US, CND)
R517	1-216-864-11	METAL CHIP	0	5%	1/16W
R518	1-216-845-11	METAL CHIP	100K	5%	1/16W
R519	1-216-821-11	METAL CHIP	1K	5%	1/16W
R520	1-216-841-11	METAL CHIP	47K	5%	1/16W
R522	1-216-803-11	METAL CHIP	33	5%	1/16W
R524	1-216-821-11	METAL CHIP	1K	5%	1/16W
R525	1-216-857-11	METAL CHIP	1M	5%	1/16W
R526	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R527	1-216-811-11	METAL CHIP	150	5%	1/16W
R528	1-216-855-11	METAL CHIP	680K	5%	1/16W
R529	1-216-845-11	METAL CHIP	100K	5%	1/16W
R530	1-216-833-11	RES, CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R535	1-216-864-11	METAL CHIP	0	5%	1/16W
R536	1-216-864-11	METAL CHIP	0	5%	1/16W
R537	1-216-864-11	METAL CHIP	0	5%	1/16W
R602	1-216-864-11	METAL CHIP	0	5%	1/16W
R604	1-218-891-11	METAL CHIP	68K	0.5%	1/16W
R605	1-218-891-11	METAL CHIP	68K	0.5%	1/16W
R606	1-216-833-11	RES, CHIP	10K	5%	1/16W
R607	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R608	1-216-864-11	METAL CHIP	0	5%	1/16W
R609	1-216-864-11	METAL CHIP	0	5%	1/16W
R610	1-216-853-11	METAL CHIP	470K	5%	1/16W
R611	1-216-857-11	METAL CHIP	1M	5%	1/16W
R612	1-216-843-11	METAL CHIP	68K	5%	1/16W
R613	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R615	1-216-857-11	METAL CHIP	1M	5%	1/16W
R616	1-219-724-11	METAL CHIP	1	1%	1/4W
R617	1-216-855-11	METAL CHIP	680K	5%	1/16W
R618	1-216-855-11	METAL CHIP	680K	5%	1/16W
R619	1-216-833-11	RES, CHIP	10K	5%	1/16W
R620	1-216-857-11	METAL CHIP	1M	5%	1/16W
R621	1-216-833-11	RES, CHIP	10K	5%	1/16W
R636	1-216-821-11	METAL CHIP	1K	5%	1/16W
R801	1-216-857-11	METAL CHIP	1M	5%	1/16W
R802	1-216-851-11	METAL CHIP	330K	5%	1/16W
R803	1-216-864-11	METAL CHIP	0	5%	1/16W
R804	1-216-864-11	METAL CHIP	0	5%	1/16W
R805	1-216-864-11	METAL CHIP	0	5%	1/16W
					(EXCEPT R90 : US, CND)
R806	1-216-864-11	METAL CHIP	0	5%	1/16W
R807	1-216-864-11	METAL CHIP	0	5%	1/16W
R808	1-216-841-11	METAL CHIP	47K	5%	1/16W
R809	1-216-849-11	METAL CHIP	220K	5%	1/16W
R810	1-218-977-11	RES, CHIP	100K	5%	1/16W
R811	1-216-853-11	METAL CHIP	470K	5%	1/16W
R812	1-218-903-11	METAL CHIP	220K	0.5%	1/16W
R813	1-218-903-11	METAL CHIP	220K	0.5%	1/16W
R814	1-216-845-11	METAL CHIP	100K	5%	1/16W
R815	1-216-853-11	METAL CHIP	470K	5%	1/16W
R816	1-218-989-11	METAL CHIP	1M	0.5%	1/16W
R817	1-216-851-11	METAL CHIP	330K	5%	1/16W
R818	1-216-841-11	METAL CHIP	47K	5%	1/16W
R819	1-216-821-11	METAL CHIP	1K	5%	1/16W
R820	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R821	1-216-821-11	METAL CHIP	1K	5%	1/16W
R822	1-216-841-11	METAL CHIP	47K	5%	1/16W
R823	1-216-833-11	RES, CHIP	10K	5%	1/16W
R824	1-216-841-11	METAL CHIP	47K	5%	1/16W
R825	1-216-833-11	RES, CHIP	10K	5%	1/16W
R826	1-216-821-11	METAL CHIP	1K	5%	1/16W
R827	1-216-841-11	METAL CHIP	47K	5%	1/16W
R828	1-216-841-11	METAL CHIP	47K	5%	1/16W
R829	1-216-864-11	METAL CHIP	0	5%	1/16W
R830	1-216-853-11	METAL CHIP	470K	5%	1/16W
R831	1-216-853-11	METAL CHIP	470K	5%	1/16W
R833	1-216-857-11	METAL CHIP	1M	5%	1/16W
R834	1-218-887-11	METAL CHIP	47K	0.5%	1/16W
R835	1-218-887-11	METAL CHIP	47K	0.5%	1/16W
R838	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description			Remark
R840	1-216-864-11	METAL CHIP	0	5%	1/16W
					(EXCEPT R90: US, CND)
R901	1-219-724-11	METAL CHIP	1	1%	1/4W
R902	1-242-996-91	METAL CHIP	0.68	1%	1/4W
R903	1-216-813-11	METAL CHIP	220	5%	1/16W
R904	1-216-833-11	RES, CHIP	10K	5%	1/16W
R905	1-216-864-11	METAL CHIP	0	5%	1/16W
R906	1-216-817-11	METAL CHIP	470	5%	1/16W
R907	1-216-849-11	METAL CHIP	220K	5%	1/16W
R908	1-216-845-11	METAL CHIP	100K	5%	1/16W
R909	1-216-864-11	METAL CHIP	0	5%	1/16W
R910	1-216-864-11	METAL CHIP	0	5%	1/16W
R911	1-216-864-11	METAL CHIP	0	5%	1/16W
R912	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R913	1-216-853-11	METAL CHIP	470K	5%	1/16W
R914	1-218-899-11	RES, CHIP	150K	0.5%	1/16W
R915	1-218-887-11	RES, CHIP	47K	0.5%	1/16W
R916	1-208-931-11	RES, CHIP	68K	0.5%	1/16W
R918	1-216-837-11	METAL CHIP	22K	5%	1/16W
R919	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R921	1-216-853-11	METAL CHIP	470K	5%	1/16W
R922	1-216-797-11	METAL CHIP	10	5%	1/16W
R923	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R924	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R927	1-216-847-11	METAL CHIP	150K	5%	1/16W
R928	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R929	1-216-835-11	METAL CHIP	15K	5%	1/16W
R930	1-216-857-11	METAL CHIP	1M	5%	1/16W
R931	1-216-833-11	RES, CHIP	10K	5%	1/16W
R932	1-216-857-11	METAL CHIP	1M	5%	1/16W
R934	1-216-835-11	METAL CHIP	15K	5%	1/16W
R935	1-216-864-11	METAL CHIP	0	5%	1/16W
R936	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R937	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R938	1-216-853-11	METAL CHIP	470K	5%	1/16W
R939	1-216-847-11	METAL CHIP	150K	5%	1/16W
R940	1-216-833-11	RES, CHIP	10K	5%	1/16W
R941	1-208-927-11	RES, CHIP	47K	0.5%	1/16W
R1001	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R1002	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R1003	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R1004	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1005	1-219-724-11	METAL CHIP	1	1%	1/4W
R1006	1-218-977-11	RES, CHIP	100K	5%	1/16W
R1010	1-218-867-11	METAL CHIP	6.8K	0.5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB301	1-233-971-11	RES, NETWORK (CHIP TYPE) 47K			
RB302	1-233-961-11	RES, NETWORK (CHIP TYPE) 1K			
RB601	1-233-965-11	RES, NETWORK (CHIP TYPE) 4.7K			
RB602	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			
RB603	1-233-965-11	RES, NETWORK (CHIP TYPE) 4.7K			
		< SWITCH >			
S801	1-762-805-21	SWITCH, PUSH (1KEY)			
					(OPEN/CLOSE DETECT)
S802	1-762-947-12	SWITCH, PUSH (1KEY) (OPEN →)			
S803	1-771-248-11	SWITCH, TACTILE (T MARK)			

MAIN

Ref. No.	Part No.	Description	Remark
S804	1-771-770-21	SWITCH, SLIDE (HOLD)	
S806	1-771-860-21	SWITCH, PUSH (PROTECT DETECT)	
S807	1-771-770-21	SWITCH, SLIDE (SYNCHRO REC)	
S901	1-771-806-21	SWITCH, PUSH (1KEY) (BATTERY IN DETECT)	
		< THERMISTOR >	
TH901	1-803-795-21	THERMISTOR, POSITIVE	
		< VIBRATOR >	
X501	1-781-574-21	VIBRATOR, CRYSTAL (22.5792MHz)	
X801	1-781-575-21	VIBRATOR, CERAMIC (19.9344MHz)	
X802	1-781-525-21	VIBRATOR, CRYSTAL (32.768kHz)	

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MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
6	1-756-028-11	BATTERY	
7	1-803-759-11	LCD MODULE	
57	1-756-028-11	BATTERY	
58	1-803-759-11	LCD MODULE	
151	1-675-466-11	MOTOR FLEXIBLE BOARD	
⚠168	X-4952-386-1	SERVICE ASSY, OP	
M601	8-835-666-01	MOTOR, DC SSM-01C14A (SPINDLE) (WITH TURN TABLE)	
M602	1-763-399-11	MOTOR, DC (SLED) (WITH GEAR)	
M603	1-763-400-11	MOTOR, DC (OVER WRITE HEAD UP/DOWN)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
⚠	1-418-028-11	ADAPTOR, AC (AC-MZR55) (R90: E, JEW/R91: JEW)	
⚠	1-418-049-11	ADAPTOR, AC (AC-MZR55) (R90: UK, HK/R91: UK, HK)	
⚠	1-418-275-11	ADAPTOR, AC (AC-MZR55) (R90: US, CND)	
⚠	1-418-276-11	ADAPTOR, AC (AC-MZR55) (R90: AEP, FR/R91: AEP, FR)	
⚠	1-418-277-11	ADAPTOR, AC (AC-MZR55) (R90: AUS)	
	1-418-493-11	REMOTECONTROL UNIT (RM-MZ2S) (BLACK) (R90: US, HK, CH, JEW)	
	1-418-493-51	REMOTECONTROL UNIT (RM-MZ2S) (SILVER) (EXCEPT R90: US/R91)	
	1-418-493-61	REMOTECONTROL UNIT (RM-MZ2S) (CLEAR) (R91)	
⚠	1-418-784-11	ADAPTOR (AC-MZR70), AC (R90: CH)	
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (R90: CH, JEW/R91: JEW)	
	1-756-023-11	CASE, BATTERY (for SIZE R6 (AA) BATTERY)	
	1-756-036-11	BATTERY, NICKEL HYDROGEN (NH-14WM)	
	1-779-504-11	CONNECTOR, OPTICAL (EXCEPT R90: HK CH, JEW/R91: HK, JEW)	
	1-779-504-51	CONNECTOR, OPTICAL (R90: HK, CH, JEW/R91: HK, JEW)	
	3-043-060-01	CASE, CHARGE (C/D)	
	3-045-575-01	CASE, CARRYING	
	3-867-571-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH, PORTUGUESE, SWEDISH, FINNISH, RUSSIAN) (R90: AEP, UK, E, HK, JEW/ R91: AEP, UK, HK, JEW)	
	3-867-571-21	MANUAL, INSTRUCTION (ENGLISH) (R90: US, AUS, CH)	
	3-867-571-31	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, DUTCH, ITALIAN) (R90: CND, AEP, FR/R91: AEP, FR)	
	3-867-571-41	MANUAL, INSTRUCTION (JAPANESE, CHINESE, KOREAN) (R90: E, HK, JEW/R91: HK, JEW)	
	3-867-571-51	MANUAL, INSTRUCTION (CHINESE) (R90: CH)	
	8-953-278-90	HEADPHONE MDR-A34SP (R90: US)	
	8-953-304-90	RECEIVER MDR-E805SP (EXCEPT R90: US)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-927-187-12

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MZ-R90/R91

SONY®

SERVICE MANUAL

2000. 07

US Model
Canadian Model
Australian Model
Chinese Model
MZ-R90
AEP Model
UK Model
E Model
Tourist Model
MZ-R90/R91

SUPPLEMENT-1

File this supplement with the service manual.

Subject:
1. **Addition of Korean Model**
2. **Correction**

(ENG-00014)

1. Addition of Korean Model

Korean Model has been added.
This is the same as Hong Kong model which is not described in this supplement-1.
Refer to MZ-R90/R91 original service manual (9-927-187-□□) for other information.

• EXPLODED VIEWS

Page	Hong Kong Model				Korean Model			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
55	107	A-3323-491-A	MAIN BOARD, COMPLETE	(R90: HK, JEW/R91: HK, JEW)	107	A-3323-292-A	MAIN BOARD, COMPLETE	(R90: KR/R91: KR)

• ELECTRICAL PARTS LIST

Page	Hong Kong Model				Korean Model			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
57		A-3323-491-A	MAIN BOARD, COMPLETE	(R90: HK, JEW/R91: HK, JEW)		A-3323-292-A	MAIN BOARD, COMPLETE	(R90: KR/R91: KR)
58	C899	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	(EXCEPT R90: US, CND)	R805	1-216-864-11	METAL CHIP 0 5% 1/16W	(R90: KR/R91: KR)
62			ACCESSORIES & PACKING MATERIALS ********************************				ACCESSORIES & PACKING MATERIALS ********************************	
	⚠	1-418-049-11	ADAPTOR, AC (AC-MZR55)	(R90: UK, HK/R91: UK, HK)			(Korean model has no AC adaptors.)	
						3-867-571-01	MANUAL, INSTRUCTION	(JAPANESE, KOREAN) (R90: KR/R91: KR)

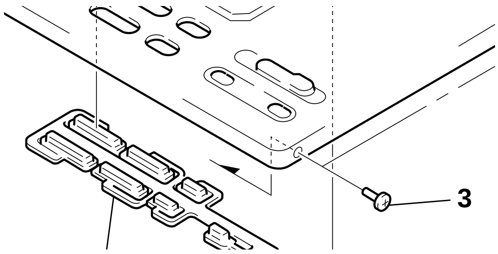
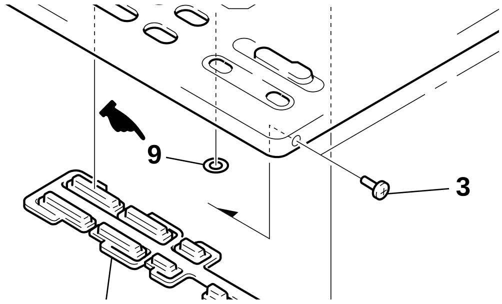
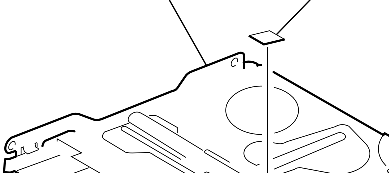
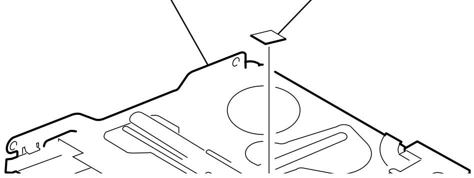
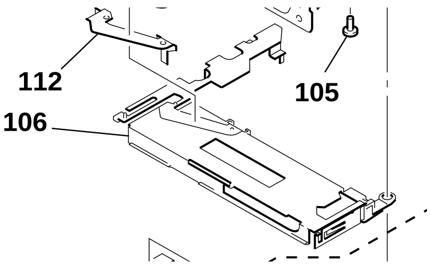
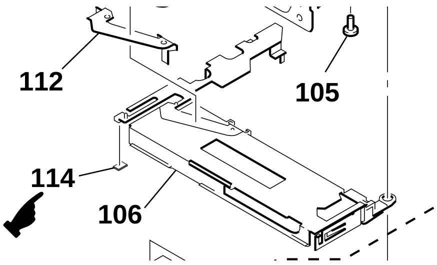
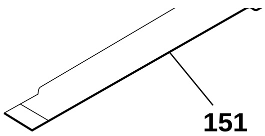
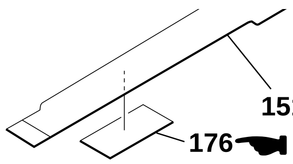
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Abbreviation
CND : Canadian model
HK : Hong Kong model
JEW : Tourist model
KR : Korean model

2. Correction

EXPLODED VIEWS

☛ : Indicates changed portion.

Page	INCORRECT	CORRECT
53	 	
	Ref. No. · Part No. · Description · Remark	Ref. No. · Part No. · Description · Remark 9 · 3-048-299-01 · WASHER (LCD)
54	 	
55	 	
	Ref. No. · Part No. · Description · Remark	Ref. No. · Part No. · Description · Remark 114 · 3-049-215-01 · SHEET (PRO)
56	 	
	Ref. No. · Part No. · Description · Remark	Ref. No. · Part No. · Description · Remark 176 · 3-222-363-01 · SPACER (FLEXIBLE)

• **ELECTRICAL PARTS LIST**

Page	INCORRECT				CORRCT			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
59	IC501	8-759-661-14	IC SN761056ADBT		IC501	8-759-682-68	IC SN761056CDBT	
	IC601	8-759-642-14	IC MPC17A56FTA		IC601	8-759-678-83	IC MPC17A56FTAEB	
	IC901	8-759-642-13	IC MPC18A31FTA		IC901	8-759-678-82	IC MPC18A31FTAEB	
	Q101	8-729-046-45	FET SI2302DS-T1		Q101	8-729-044-58	FET SI2304DS-T1	
	Q201	8-729-046-45	FET SI2302DS-T1		Q201	8-729-044-58	FET SI2304DS-T1	

9-927-187-83

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Audio Entertainment Group

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